

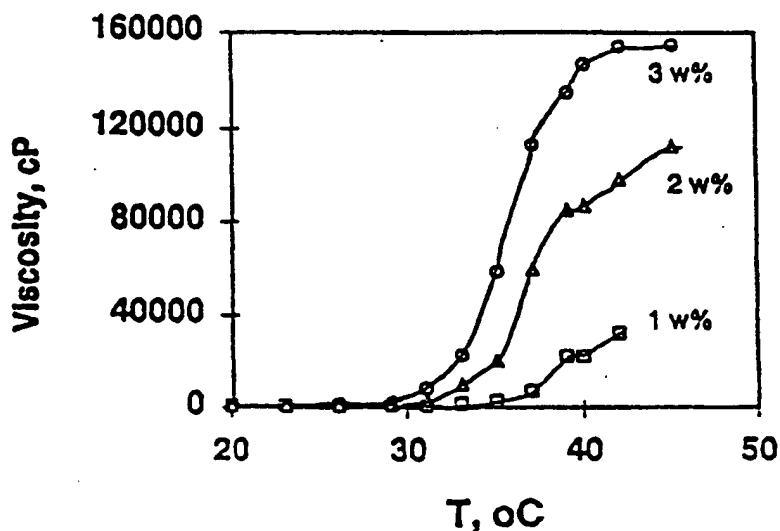
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74		A1	(11) International Publication Number: WO 98/48768
			(43) International Publication Date: 5 November 1998 (05.11.98)
(21) International Application Number: PCT/US98/08931			63 Webster Street, Whitman, MA 02382 (US). LUCZAK, Scott [US/US]; 3 Remsen Avenue, Medfield, MA 02052 (US). MENDUM, Thomas, H., E. [US/US]; 45 Columbus Avenue #1, Somerville, MA 02143 (US).
(22) International Filing Date: 1 May 1998 (01.05.98)			
(30) Priority Data: 08/846,883 1 May 1997 (01.05.97) US			
(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 08/846,883 (CON) Filed on 1 May 1997 (01.05.97)			
(71) Applicant (for all designated States except US): MEDLOGIC GLOBAL CORPORATION [US/US]; 4815 List Drive, Colorado Springs, CO 80919 (US).			
(72) Inventors; and (75) Inventors/Applicants (for US only): RON, Eyal, S. [US/US]; 7 Coach Road, Lexington, MA 02173 (US). HAND, Barry, J. [US/US]; 145 Butternut Hollow, Acton, MA 01718 (US). BROMBERG, Lev, S. [US/US]; 17 Sherwood Road, Swampscott, MA 01907 (US). KEARNEY, Marie [US/US]; 342 Faneuil Street #1, Brighton, MA 02135 (US). SCHILLER, Matthew, E. [US/US]; 23C Sagamore Way, Waltham, MA 02154 (US). AHEARN, Peter, M. [US/US];			(74) Agents: KREBS, Robert, E. et al.; Burns, Doane, Swecker & Mathis, L.L.P., P.O. Box 1404, Alexandria, VA 22313-1404 (US).
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).			
Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.			

(54) Title: COMPOSITIONS FOR COSMETIC APPLICATIONS

(57) Abstract

A cosmetic composition is described having a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.



BEST AVAILABLE COPY

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

COMPOSITIONS FOR COSMETIC APPLICATIONS

This application is a continuation-in-part application of copending application
5 U.S.S.N. 60/034,805 filed January 2, 1997, and entitled "Responsive Polymer
Networks and Methods of Their Use", which is a continuation-in-part application of
copending application PCT/US96/10376 filed June 14, 1996, designating the United
States, and entitled "Responsive Polymer Networks and Methods of Their Use", which
is a continuation-in-part application of copending application U.S.S.N. 08/580,986 filed
10 January 3, 1996, and entitled "Responsive Polymer Networks and Methods of Their
Use", each of which is incorporated entirely by reference.

Field of the Invention

The present invention relates to a cosmetic composition useful in a variety of
15 topical and personal care products, including treatments of disorders and imperfections
of the skin or other areas of the body. More particularly, the present invention is
directed to a cosmetic composition comprising a poloxamer:poly(acrylic acid)
polymer network that can be designed to reversibly gel over a wide range of
conditions to provide a composition having a controllable range of viscosities, making
20 it useful in a variety of cosmetic and personal care applications.

Background of the Invention

Many examples are known of cosmetic compositions intended for treatment of
the skin or elsewhere on the body, where it is desired to have certain properties of
25 viscosity. Hydrogels, such as cellulose, have been included as thickeners in cosmetic
compositions. A hydrogel is a polymer network which absorbs a large quantity of
water without the polymer dissolving in water. The hydrophilic areas of the polymer
chain absorb water and form a gel region. The extent of gelation depends upon the
volume of the solution which the gel region occupies.

30 Reversibly gelling solutions are known in which the solution viscosity increases

and decreases with an increase and decrease in temperature, respectively. Such reversibly gelling systems are useful wherever it is desirable to handle a material in a fluid state, but performance is preferably in a gelled or more viscous state.

A known material with these properties is a thermal setting gel using block
5 copolymer polyols, available commercially as Pluronic® polyols (BASF, Ludwigshafen, Germany), which is described in U.S. Patent No. 4,188,373. Adjusting the concentration of the polymer gives the desired liquid-gel transition. However, concentrations of the polyol polymer of at least 18-20 % by weight are needed to produce a composition which exhibits such a transition at commercially or
10 physiologically useful temperatures. Also, solutions containing 18-20 % by weight of responsive polymer are typically very viscous even in the "liquid" phase, so that these solutions can not function under conditions where low viscosity, free-flowing is required prior to transition. In addition, these polymer concentrations are so high that the material itself may cause unfavorable interactions during use.

15 Another known system which is liquid at room temperature, but forms a semi-solid when warmed to about body temperature is formed from tetrafunctional block polymers of polyoxyethylene and polyoxypropylene condensed with ethylenediamine, commercially available as Tetronic® polyols. These compositions are formed from approximately 10% to 50% by weight of the polyol in an aqueous medium. See, U.S.
20 Patent No. 5,252,318.

Joshi *et al.* in U.S. Patent No. 5,252,318 reports reversible gelling compositions which are made up of a physical blend of a pH-sensitive gelling polymer (such as a cross-linked poly(acrylic acid) and a temperature-sensitive gelling polymer (such as methyl cellulose or block copolymers of poly(ethylene glycol) and poly(propylene glycol)). In compositions including methylcellulose, 5- to 8-fold increases in viscosity
25 are observed upon a simultaneous change in temperature and pH for very low methylcellulose levels (1-4% by weight). See, Figs. 1 and 2 of Joshi *et al.* In compositions including Pluronic® and Tetronic® polyols, commercially available forms of poly(ethylene glycol)/poly(propylene glycol) block copolymers, significant
30 increases in viscosity (5- to 8-fold) upon a simultaneous change in temperature and pH

are observed only at much higher polymer levels. See, Figs. 3-6 of Joshi *et al.*

Hoffman *et al.* in WO 95/24430 disclose block and graft copolymers comprising a pH-sensitive polymer component and a temperature-sensitive polymer component. The block and graft copolymers are well-ordered and contain regularly repeating units of the pH-sensitive and temperature-sensitive polymer components. The copolymers are described as having a lower critical solution temperature (LCST), at which both solution-to-gel transition and precipitation phase transition occur. Thus, the transition to a gel is accompanied by the clouding and opacification of the solution. Light transmission is reduced, which may be undesirable in many applications, where the aesthetic characteristics of the composition are of some concern.

Thus, the known systems which exhibit reversible gelation are limited in that they require large solids content and/or in that the increase in viscosity less than 10-fold. In addition, some known systems exhibit an increase in viscosity which is accompanied with the undesirable opacification of the composite.

Summary of the Invention

It is an object of the present invention to provide a cosmetic composition which includes a component capable of reversible gelation or viscosification.

It is a further object of the invention to provide a cosmetic composition which includes an ingredient capable of gelation or viscosification at very low solids content.

It is another object of the present invention to provide a cosmetic composition which possesses improved flow and gelation characteristics as compared to properties possessed by conventional reversible gelation compositions.

It is a further object of the invention to provide a polymer network composition for use in cosmetic compositions useful as a surfactant or emulsifier in the solubilization of additives and, in particular, hydrophobic additives.

It is a further object of the invention to provide a cosmetic composition which possesses the appropriate thickness, emolliency and cosmetic effect with a minimum of solids content.

It is a further object of the invention to provide a polymer network for use in

cosmetic compositions useful as a suspending agent for otherwise insoluble additives.

It is yet a further object of the present invention to provide a composition capable of solubilizing emulsions at elevated temperatures.

It is yet a further object of the invention to provide new and useful cosmetic compositions incorporating the reversibly gelling polymer network composition of the present invention, which take advantage of its unique advantageous properties.

It is yet another object of the present invention to provide reversibly gelling polymer network compositions which are composed of biocompatible polymers.

These and other objects of the invention are achieved with a cosmetic composition which incorporates a poloxamer:poly(acrylic acid) polymer network as a cosmetically acceptable carrier. The polymer network comprises a poloxamer component randomly bonded to a poly(acrylic acid), or PAA, component in an aqueous-based medium, the polymer network being capable of aggregating in response to an increase in temperature. The reverse thermal viscosifying poloxamer:poly(acrylic acid) polymer network includes random covalent bonding between the poly(acrylic acid) component and the poloxamer component of the network. The polymer network may also include some unbound or "free" poloxamer or other additives which contribute to or modify the characteristic properties of the polymer composition.

In addition, the cosmetic composition includes a cosmetic agent selected to provide a preselected cosmetic effect. By "cosmetic agent", as that term is used herein, it is meant that the additive imparts a cosmetic effect. A cosmetic effect is distinguishable from a pharmaceutical effect in that a cosmetic effect relates to the promoting bodily attractiveness or masking the physical manifestations of a disorder or disease. In contrast, a pharmaceutical seeks to treat the source or symptom of a disease or physical disorder. It is noted however, that the same additives may have either a cosmetic or pharmaceutical effect, depending upon the amounts used and the manner of administration.

By "cosmetic" as that term is used herein, it is meant the cosmetic and

personal-care applications intended to promote bodily attractiveness or to cover or mask the physical manifestations of a disorder or disease. Cosmetics include those products subject to regulation under the FDA cosmetic guidelines, as well as sunscreen products, acne products, skin protectant products, anti-dandruff products, and deodorant and antiperspirant products.

By "gelation" or viscosification, as that term is used herein, it is meant a drastic increase in the viscosity of the polymer network solution. Gelation is dependent on the initial viscosity of the solution, but typically a viscosity increase in the range of preferably 2- to 100-fold, and preferably 5- to 50-fold, and more preferably 10- to 20-fold is observed in the polymer network which is used in the preparation of the cosmetic compositions of the invention. Such effects are observed in a simple polymer network solution and the effect may be modified by the presence of other components in the cosmetic composition.

By "reversibly gelling" as that term is used herein, it is meant that the process of gelation takes place upon an *increase* in temperature rather than a decrease in temperature. This is counter-intuitive, since it is generally known that solution viscosity *decreases* with an increase in temperature.

As used herein, "poloxamer" is a triblock copolymer derived from poly(ethylene glycol)-poly(propylene glycol)-poly(ethylene glycol) blocks. The poloxamer is capable of responding to a change in temperature by altering its degree of association and/or agglomeration. The aggregation may be in the form of micelle formation, precipitation, labile crosslinking or other factors. The poloxamer has the general formula of a triad ABA block copolymer, $(P_1)_a(P_2)_b(P_1)_a$, where P_1 = poly(ethylene glycol) and P_2 = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.

The poly(acrylic acid) component includes poly(acrylic acid) and its salts. The poly(acrylic acid) supports and interacts with the poloxamer component so that a multi-material, responsive polymer network is formed. The interaction of the poloxamer and poly(acrylic acid) exhibits a synergistic effect, which magnifies the effect of the poloxamer component in viscosifying and/or gelling the solution.

The novel interaction between the constituent polymers components of the polymer network permits formation of gels at very low solids content. Gelation and/or viscosification is observed in aqueous solutions having about 0.01 to 20 wt% of the poloxamer component and about 0.01 to 20 wt% of the poly(acrylic acid) component.

5 A typical reversibly gelling polymer network may be comprised of less than about 4 wt% of total polymer solids (e.g., poloxamer and poly(acrylic acid)) and even less than 1 wt% total polymer solids while still exhibiting reverse thermal viscosification. Of course, the total solids content including additives of a reversibly gelling polymer network composition may be much higher. The viscosity of the gel increases at least
10 ten-fold with an increase in temperature of about 5°C at pH 7 and 1 wt% polymer. Viscosity increases may be even greater over a larger temperature range at pH 7 and 1% polymer network content.

The relative proportion of poloxamer and poly(acrylic acid) may vary dependent upon the desired properties of the polymer composition. In one
15 embodiment, the poloxamer is present in a range of about 1 to 20 wt% and the poly(acrylic acid) is present in a range about of 99 to 80 wt%. In another embodiment, the poloxamer component is present in a range of about 21 to 40 wt% and the poly(acrylic acid) component is present in a range of about 79 to 60 wt%. In another embodiment, the poloxamer component is present in a range of about 41 to 50
20 wt% and the poly(acrylic acid) component is present in a range of about 59 to 50 wt%. In another embodiment, the poloxamer component is present in a range of about 51 to 60 wt% and the poly(acrylic acid) component is present in a range of about 49 to 40 wt%. In yet another embodiment, the poloxamer component is present in a range of about 61 to 90 wt% and the poly(acrylic acid) component is present in a
25 range of about 39 to 20 wt%. In another embodiment, the poloxamer component is present in a range of about 81 to 99 wt% and the poly(acrylic acid) component is present in a range of about 19 to 1 wt%.

The poloxamer:poly(acrylic acid) polymer network described above is included in a cosmetic composition to improve the flow characteristics, thickness and other
30 properties of the composition. The composition includes additional cosmetic agents.

such as are needed for the cosmetic purpose of the composition. Additives also may be included to modify the polymer network performance, such as to increase or decrease the temperature of the liquid-to-gel transition and/or to increase or decrease the viscosity of the responsive polymer composition.

5 In one aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic compositions to impart thickening properties to the cosmetic composition at the use and/or application temperature. Such thickening properties include enhanced overall viscosity, as well as a desirable viscosity response with temperature. The polymer network may be useful as a thickener in pH ranges
10 where other thickeners are not effective.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to stabilize and solubilize hydrophobic agents in the cosmetic composition. The polymer network may be included to increase emulsion stability. Many emulsions, i.e., suspension of small
15 droplets or particles of a first material in a second material, lose viscosity upon heating. As will be demonstrated herein, the poloxamer:poly(acrylic acid) polymer network retains its emulsifying properties even with temperature increase.

In addition, it may be included in the composition to impart emolliency to the composition. The composition may also act as a film-forming agent after it has been
20 applied to the skin. This film-forming agent may be used as a barrier to prevent water loss from the skin which contributes to the moisturization of the skin.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network may be included as an additive in cosmetic applications to prevent viscosity loss at elevated temperatures.

Brief Description of the Drawing

The invention is described with reference to the Drawing, which is presented for the purpose of illustration and is in no way intended to be limiting, and in which:

Figure 1 is a graph of viscosity vs. temperature for a 1 wt%, 2 wt% and 3 wt%
30 responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid)

(1:1) at pH 7.0 measured at a shear rate of 0.44 sec^{-1} ;

Figure 2 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition demonstrating reversibility of the viscosity response;

5 Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates;

Figure 4 shows a viscosity response curve for a 2 wt% poloxamer: poly(acrylic acid) polymer network composition prepared with nominal mixing and stirring and prepared using high shear homogenization (8000 rpm, 30 min);

10 Figure 5 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition at various pHs:

Figure 6 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.25 wt% KCl;

15 Figure 7 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition with and without addition of 0.5 wt% acetamide MEA;

Figure 8 is a graph of viscosity vs. temperature for a 1 wt% poloxamer: poly(acrylic acid) polymer network composition without and with 5 wt%, 10 wt% and
20 20 wt% added ethanol, respectively;

Figure 9 is an illustration of a reversibly gelling polymer network used as an emulsifier and stabilizer for a hydrophobic agent;

Figure 10 is a schematic illustration of the poloxamer:poly(acrylic acid) polymer network below and above the transition temperature illustrating the
25 aggregation of the hydrophobic poloxamer regions;

Figure 11 is a graph of viscosity vs. pH for a 1 wt% responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid) (1:1) measured at a shear rate of 0.44 sec^{-1} ;

Figure 12 is a plot of viscosity vs. temperature for (a) a 1 wt% responsive
30 polymer network aqueous composition of Pluronic® F127 poloxamer/poly(acrylic acid)

(1:1) and (b) a 1 wt% physical blend of Pluronic® F127 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate 0.22 sec^{-1} ;

Figure 13 is a plot of viscosity vs. temperature for a 1 wt% responsive polymer network aqueous composition of Pluronic® F88 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate 2.64 sec^{-1} ;

Figure 14 is a graph of the viscosity vs. temperature effect for a responsive polymer network composition of 2 wt% Pluronic® P104 poloxamer/poly(acrylic acid) (1:1) in deionized water at pH 7.0 measured at shear rate of 22 sec^{-1} ;

Figure 15 is plot of viscosity vs. temperature for a responsive polymer network composition of 2 wt% Pluronic® F123 poloxamer/poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of 22 sec^{-1} ;

Figure 16 is a plot of viscosity vs. temperature for 1 wt% made of series of poloxamers and poly(acrylic acid) (1:1) in deionized water at a shear rate of 132 sec^{-1} ;

Figure 17 is a plot showing release of hemoglobin from a poloxamer/poly(acrylic acid) polymer network of the invention;

Figure 18 is a plot showing the release of lysozyme from the poloxamer/poly(acrylic acid) polymer complex of the invention;

Figure 19 is a plot showing release of insulin from a poloxamer/poly(acrylic acid) polymer network composition of the invention;

Figure 20 is a plot of viscosity vs. temperature for a poloxamer/poly(acrylic acid) polymer network composition (a) before and (b) after sterilization by autoclave;

Figure 21 is a plot of viscosity vs. temperature for an oil-free moisturizing formulation prepared from (a) a responsive polymer network composition of the invention and (b) a conventional oil-in-water formulation;

Figure 22 is a plot of equilibrium solubility of estradiol (A, B) and progesterone (C, D) in aqueous solutions (pH 7) of Pluronic® F127 (A, C) and responsive polymer network (B, D) vs. temperature;

Figure 23 is a plot of the ratio of equilibrium solubilities of estradiol in responsive polymer network and water vs. polymer concentration in the responsive polymer network solutions;

Figure 24 is a plot of the effect of loading fluorescein on the onset of gelation of responsive polymer network vs. total polymer concentration in responsive polymer network solution (pH 7.0);

Figure 25 is a plot of the percentage of a) estradiol and b) progesterone release
5 from responsive polymer network vs. time;

Figure 26 is a plot of the rate of progesterone release and macroscopic viscosity vs. polymer concentration;

Figure 27 is a plot of the percentage of progesterone release vs. polymer concentration in responsive polymer network and,

10 Figure 28 is a plot of the relative diffusivity of poly(styrene) latex particles in water and responsive polymer network.

Detailed Description of the Invention

The present invention is directed to a cosmetic composition comprising a
15 cosmetically acceptable carrier comprising a novel poloxamer:poly(acrylic acid) polymer network. The polymer network functions as a temperature sensitive thickening agent, and in addition possesses surfactant and emulsifying capabilities which may be beneficial to the cosmetic composition. The polymer network composition according to the invention includes a poloxamer component randomly
20 bonded to a poly(acrylic acid) component. The two polymer components may interact with one another on a molecular level. The polymer network contains about 0.01-20 wt% each of poloxamer and poly(acrylic acid). Exemplary polymer network compositions range from about 1:10 to about 10:1 poloxamer:poly(acrylic acid). Polymer network gel compositions which exhibit a reversible gelation at body
25 temperature (25-40°C) and/or at physiological pH (ca. pH 3.0-9.0) and even in basic environments up to pH 13 (hair care) are particularly preferred for cosmetic applications.

In one embodiment of the invention, a 1:1 poloxamer:poly(acrylic acid) polymer network at appropriate pH exhibits flow properties of a liquid at about room
30 temperature, yet rapidly thickens into a gel consistency of at least about five times

greater, preferably at least about 10 times greater, and even more preferably at least about 30 times and up to 100 times greater, viscosity upon increase in temperature of about 10 °C and preferably about 5 °C. The reversibly gelling polymer network of the present invention exhibit gelation even at very low polymer concentrations. For
5 example, polymer network compositions at pH 7 comprising about 0.5 wt% poloxamer component and about 0.5 wt% PAA exhibits a significant increase in viscosity from a free-flowing liquid (50 cps) to a gel (6000 cps). The observed gelation takes place at low solids contents, such as less than 20 wt% or preferably less than about 10 wt%, or more preferably less than about 2.5 wt% or most preferably less than about 0.1 wt%.
10 Thus, only a small amount by weight of the polymer network need be incorporated into a cosmetic composition in order to provide the desired thickening or viscosifying effect.

The reverse viscosification effect at low polymer concentrations provides clear, colorless gels which are particularly well-suited to cosmetic applications. For example,
15 very little residue is formed upon dehydration which may be important in some applications, such as in topically applied cosmetics. An additional advantage of the polymer network of the invention is that it remains clear and translucent above and below the critical temperature or pH. These characteristics of the reversibly gelling polymer network make it well suited for use in cosmetic compositions.

20 The polymer network of the present invention technology may be added to cosmetic formulations to increase the thickness and viscosity of the composition. The poloxamer:poly(acrylic acid) polymer network possesses hydrophobic regions capable of aggregation. Unlike conventional thickeners, the aggregation of the polymer network of the present invention is temperature sensitive. Thus, the inventive polymer
25 network of the present invention may have a transition temperature (i.e. temperature of aggregation) above room temperature so that the cosmetic composition is of low viscosity at or below room temperature and is of high viscosity at or around body temperature (body temperature includes both surface and internal body temperature). Thus, a composition may be prepared at low temperatures while the polymer network
30 is in a low viscosity state. Mixing of ingredients under low viscosity is expected to be

easier, thus simplifying the manufacturing process. Yet, the resultant mixture would be of increased viscosity at use temperatures. As a further advantage, a cosmetic composition comprising poloxamer:poly(acrylic acid) polymer network may be spread thinly to allow for even application, due to its low viscosity at room temperature, but will thicken and "fill" the skin contours upon warming up to body surface temperature.

In another aspect of the invention, the composition may be applied through a nozzle that provides high shear to reduce viscosity, yet the composition regains its viscosity after application to the skin. This contrasts with conventional formulations which permanently lose viscosity after being subjected to high shear.

In another aspect of the invention, the composition may be formulated and applied as a liquid, spray, semi-solid gel, cream, ointment, lotion, stick, roll-on formulation, mousse, pad-applied formulation, and film-forming formulation.

The poloxamer:poly(acrylic acid) polymer network may also be included in a cosmetic composition for use as a stabilizing, solubilizing or emulsifying agent for a hydrophobic component of the cosmetic formulation. The strong hydrophilic regions of the poloxamer resulting from aggregation and micelle formation create hydrophobic domains which may be used to solubilize and control release of hydrophobic agents. Similar micelle-based systems have been shown to protect trapped peptides against enzymatic degradation from surface enzymes.

The reversibly gelling polymer network of the present invention is a unique polymer composition designed to abruptly change its physical characteristics or the characteristics and properties of materials mixed therewith with a change in temperature. Without intending to be bound by any particular mechanism or chemical structure, it is believed that the structure of the polymer network involves a random bonding of the poloxamer onto the backbone of the poly(acrylic acid). A portion of the poloxamer which is present during the polymerization reaction which forms the poly(acrylic acid) is bonded to the backbone of the forming poly(acrylic acid) through hydrogen abstraction and subsequent reaction. See detailed discussion of the mechanism, below. The combination of the poly(acrylic acid) and randomly bonded poloxamer gives the composition its unique properties. Any free poloxamer remaining

after polymerization of PAA remains associated with the random co-polymer, resulting in a miscible composition. Free poloxamer may also be present in the polymer network composition; however, its presence is not required in order to observe reverse thermal viscosification.

5 The poly(acrylic acid) may be linear, branched and/or crosslinked. Poly(acrylic acid) is capable of ionization with a change in pH of the solution. By ionization, as that term is used with respect to poly(acrylic acid), it is meant the formation of the conjugate base of the acrylic acid, namely acrylate. As used herein, poly(acrylic acid) includes both ionized and non-ionized versions of the polymer. Changes in ionic
10 strength may be accomplished by a change in pH or by a change in salt concentration. The viscosifying effect of the polymer network is partly a function of the ionization of the poly(acrylic acid); however, reverse thermal gelling may occur without ionization. Changes to the ionic state of the polymer causes the polymer to experience attractive (collapsing) or repulsive (expanding) forces. Where there is no need or desire for the
15 composition to be applied in a high viscosity state, it may be possible to prepare the composition as non-ionized poly(acrylic acid). The body's natural buffering ability will adjust the pH of the applied composition to ionize the poly(acrylic acid) and thereby develop its characteristic viscosity.

 The poloxamer possesses regions of hydrophobic character, e.g., poly(propylene glycol) blocks, and hydrophilic character, e.g., poly(ethylene glycol) blocks. The
20 poloxamer may be linear or branched. Suitable poloxamers include triad block copolymers of poly(ethylene glycol) and poly(propylene glycol) having the general formula $(P_1)_a(P_2)_b(P_1)_a$, where P_1 = poly(ethylene glycol) and P_2 = poly(propylene glycol) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.
25 where poly(propylene glycol) represents the hydrophobic portion of the polymer and poly(ethylene glycol) represents the hydrophilic portion of the polymer. Pluronic® polymers (BASF) are commercially available for a in the range of 16 to 48 and b ranging from 54-62. One or more poloxamers may be used in the reversibly gelling polymer network composition of the present invention.

30 The reversibly gelling responsive polymer networks compositions of the present

invention are highly stable and do not exhibit any phase separation upon standing or upon repeated cycling between a liquid and a gel state. Samples have stood at room temperature for more than three months without any noticeable decomposition, clouding, phase separation or degradation of gelation properties. This is in direct contrast to polymer blends and aqueous mixed polymer solutions, where phase stability and phase separation is a problem, particularly where the constituent polymers are immiscible in one another.

An example of the dramatic increase in viscosity and of the gelation of the reversibly gelling polymer network compositions of the invention is shown in Figure 1. Figure 1 is a graph of viscosity vs. temperature for 1 wt%, 2 wt% and 3 wt% polymer network compositions comprising 1:1 poloxamer:poly(acrylic acid), hydrated and neutralized. The viscosity measurements were taken on a Brookfield viscometer at a shear rate of 0.44 sec^{-1} at pH 7.0. All solutions had an initial viscosity of about 1080 cP and exhibited a dramatic increase in viscosity to gel point at about 35°C . This is not typical of all polymer network compositions since polymerization condition will affect initial viscosity. Final viscosities were approximately 33,000 cP, 100,000 cP and 155,000 cP for the 1 wt%, 2 wt% and 3 wt% compositions, respectively. This represents viscosity increases of about 30-, 90- and 140-fold, respectively. This effect is entirely reversible. Upon cooling, the composition regains its initial viscosity. This is demonstrated in Figure 2, where a 1 wt% poloxamer:poly(acrylic acid) composition is warmed through the transition temperature up to 35°C (simple curve), cooled to room temperature (24°C , ticked curve) and then warmed again to up above the transition temperature (open box curve). The viscosity response was virtually identical in all three instances.

As would be expected with a non-Newtonian system, the solution viscosity differs with different shear rates. Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates. The viscosity response is consistent between 24°C and 34°C ; however, the final viscosity is reduced with increasing shear rate.

However, unlike many prior art hydrogels, e.g., carbomers, the

poloxamer:poly(acrylic acid) polymer network composition does not permanently lose viscosity after being subjected to high shear conditions. The poloxamer:poly(acrylic acid) polymer network composition remains unaffected by such shear conditions as homogenization. Figure 4 compares the viscosity response curve of a 2 wt%

5 poloxamer:poly(acrylic acid) polymer composition prepared with nominal mixing (simple lime) and stirring with that of a polymer composition of similar composition prepared using high shear homogenization designated by a ticked line (8000 rpm, 30 min). No significant decrease in viscosity is observed.

10 A number of factors influence the viscosity and transition temperature of the composition. The more important factors include polymer concentration, pH and presence and nature of additives.

The effect of pH on the viscosity of reversibly gelling polymer networks is shown in Figure 5. Increasing pH from the starting pH has a lesser effect on the viscosity than decreasing the pH. This may relate to the extent of ionization of the
15 poly(acrylic acid) component of the polymer network as discussed above. This may be clearly seen in Figure 5 when comparing the viscosity response of a 1 wt% poloxamer:poly(acrylic acid) polymer composition at pH 5 and pH 11. Satisfactory viscosities can be obtained at high pHs indicating the potential value of the reversibly gelling polymer network in products such as depilatories, hair straighteners and hair
20 relaxers.

The responsive polymer network may also include additives for influencing the performance of the polymer composition, such as the transition temperature and the viscosity of the polymer composition above the transition temperature. The following list is not intended to be exhaustive but rather illustrative of the broad variety of
25 additives which can be used.

These materials include solvents (e.g., 2-propanol, ethanol, acetone, 1,2-pyrrolidinone, N-methylpyrrolidinone), salts (e.g., calcium chloride, sodium chloride, potassium chloride, sodium or potassium phosphates, borate buffers, sodium citrate), preservatives (benzalkonium chloride, phenoxyethanol, sodium
30 hydroxymethylglycinate, ethylparaben, benzoyl alcohol, methylparaben, propylparaben,

butylparaben, Germaben II), humectant/moisturizers (acetamide MEA, lactimide MEA, hydrolyzed collagen, mannitol, panthenol, glycerin), lubricants (hyaluronic acid, mineral oil, PEG-60-lanolin, PPG-12-PEG-50-lanolin, PPG-2 myristyl ether propionate) and surfactants.

5 Surfactants may be divided into three classes: cationic, anionic, and nonionics. An example of a cationic surfactant used is ricinoleamidopropyl ethyldimonium ethosulfate (Lipoquat R). Anionic surfactants include sodium dodecyl sulfate and ether sulfates such as Rhodapex CO-436. Nonionic surfactants include Surfynol CT-111, TG, polyoxyethylene sorbitan fatty acid esters such as Tween 65 and 80, sorbitan fatty
10 acid esters such as Span 65, alkylphenol ethoxylates such as Igepal CO-210 and 430, dimethicone copolyols such as Dow Corning 190, 193, and Silwet L7001.

 The addition of polymers has been studied including xanthan gum, celluloses such as hydroxyethylcellulose (HEC), carbomethoxycellulose (CMC), lauryldimonium hydroxypropyl oxyethyl cellulose (Crodacel QL), hydroxypropylcellulose (HPC), and
15 hydroxypropylmethylcellulose (HPMC), poly(acrylic acid), cyclodextrins, methyl acrylamido propyl triammonium chloride (MAPTAC), polyethylene oxide, polyvinylpyrrolidone, polyvinyl alcohol, and propylene oxide/ethylene oxide random copolymers. Poloxamers may also be used as additives. Examples include both the Pluronic® polyols having an $(P_1)_a(P_2)_b(P_1)_a$ structure such as Pluronic® F38, L44, P65,
20 F68, F88, L92, P103, P104, P105, F108, L122 and F127, as well as the reverse Pluronic® R series $(P_2)_a(P_1)_b(P_2)_a$ structure such as Pluronic® 17R2 and 25R8. Other miscellaneous materials include propylene glycol, urea, triethanolamine, alkylphenol ethoxylates (Iconol series), and linear alcohol alkoxylates (Plurafac series).

 Additives affect the viscosity of the compositions differently depending upon
25 the nature of the additive and its concentration. Some additives will affect the initial or final viscosity, whereas others will affect the temperature range of the viscosity response, or both.

 Potassium chloride and acetamide MEA are two examples of additives which decrease the final viscosity of the composition (see, Example 30). KCl (0.25%) added
30 to a 1 wt% reversibly gelling polymer composition reduces the viscosity by about 3000

cps. See, Figure 6. The humectant, acetamide MEA, lowers the viscosity of a 1 wt% solution by approximately 1,500 cps (see, Figure 7).

Glycerin, ethanol and dimethicone copolymer have been shown to affect the temperature range over which the viscosity response occurs. Glycerin shifts the transition temperature to a slightly lower range from an initial 24-34 °C to about 24-30 °C, but does not affect the final viscosity (see, Example 44). The effect of ethanol on the viscosity is different at different concentration levels. At 5 wt% and 10 wt% added ethanol, the transition temperature is shifted to lower ranges, e.g., 24-29 °C and 20-29 °C, respectively. At 20 wt% added ethanol, the composition not only exhibits a lowering of the transition temperature, but also a marked increase in initial and final viscosity. See, Figure 8. Dimethicone copolymer (1 wt%) also changed the transition temperature, but in this instance the transition temperature range was raised to 28-41 °C. Thus, proper selection of additives permits the formulator to adjust the transition temperature to various ranges.

Those skilled in the art will appreciate that the polymer network compositions of the present invention may be utilized for a wide variety of cosmetic and personal care applications. To prepare a cosmetic composition, an effective amount of cosmetically active agent(s) which imparts the desirable cosmetic effect is incorporated into the reversibly gelling polymer network composition of the present invention. Preferably the selected agent is water soluble, which will readily lend itself to a homogeneous dispersion through out the reversibly gelling polymer network composition; however, the polymer network has been demonstrated to significantly solubilize or suspend hydrophilic agents in order to improve formulation homogeneity (see, Example 36). It is also preferred that the agent(s) is nonreactive with the polymer network composition. For materials which are not water soluble, it is also within the scope of the invention to disperse or suspend powders or oil (lipophilic materials) throughout the polymer network composition. It will also be appreciated that some applications may require a sterile environment. It is contemplated as within the scope of the invention that the reversibly gelling polymer network compositions of the present invention may be prepared under sterile conditions. An additional feature

of the reversibly gelling polymer composition is that is prepared from constituent polymers that have known accepted toxicological profiles.

The poloxamer:poly(acrylic acid) polymer network has been evaluated under Good Laboratory Practice (GLP) standard protocols known in the art for toxicity in animal models and found to exhibit no toxic effects. The results of the toxicity study are summarized in the following Table 1. The non-toxicity of the polymer network makes it an ideal candidate for use in cosmetic compositions.

Table 1. Toxicity data for 6% poloxamer:poly(acrylic acid) solution at pH 7.

Reaction testes	mode of testing	results
Skin sensitization	guinea pig - topical	not a sensitizer
eye irritation	rabbit eye instillation	negative
primary dermal irritation	rabbit - topical	very slight edema (1 on a scale of 1-8)
acute dermal toxicity	rat - single dose (2g/kg)	no toxicity
acute oral toxicity	rat - single dose (5g/kg)	no toxicity
AMES test		negative

Exemplary cosmetic and personal care applications, for which the reversibly gelling polymer network composition may be used include, but are not limited to, baby products, such as baby shampoos, lotions, powders and creams; bath preparations, such as bath oils, tablet and salts, bubble baths, bath fragrances and bath capsules; eye makeup preparations, such as eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover and mascara; fragrance preparations, such as colognes and toilet waters, powders and sachets; noncoloring hair preparations, such as hair conditioner, hair spray, hair straighteners, permanent waves, rinses shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations such as hair dye, hair tints, hair shampoos, hair color sprays, hair lighteners and hair bleaches; makeup preparations such as face powders, foundations, leg and body paints, lipstick, makeup bases, rouges and makeup fixatives; manicuring preparations such as basecoats and

undercoats, cuticle softeners, nail creams and lotions, nail extenders, nail polish and enamel, and nail polish and enamel remover; oral hygiene products such as dentrifices and mouthwashes; personal cleanliness, such as bath soaps and detergents, deodorants, douches and feminine hygiene product; shaving preparations such as aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap and preshave lotions; skin care preparations such as cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders and sprays, moisturizers, night preparations, paste masks, and skin fresheners; and suntan preparations such as suntan creams, gels and lotions, indoor tanning preparations.

Preparation of the above-named cosmetic compositions and others may be accomplished with reference to any of the cosmetic formulation guidebooks and industry journals which are available in the cosmetic industry. These references supply standard formulations which may be modified by the addition or substitution of the reversible viscosifying polymer network of the present invention into the formulation. Suitable guidebooks include Cosmetics and Toiletries Magazine, Vol. 111 (March, 1996); Formularv: Ideas for Personal Care; Croda, Inc. Parsippany, NJ (1993); and Cosmeticon: Cosmetic Formularv, BASF, which are hereby incorporated in their entirety by reference.

The cosmetic composition may be in any form. Suitable forms include but are not limited to lotions, creams, sticks, roll-ons formulations, mousses, aerosol sprays, pad-applied formulations, and film-forming formulations.

As those skilled in the art will appreciate, the foregoing list is exemplary only. Because the reversibly gelling polymer network composition of the present invention is suited for application under a variety of physiological conditions, a wide variety of cosmetically active agents may be incorporated into and administered from the polymer network composition. In addition to the poloxamer:poly(acrylic acid) polymer network, additional cosmetically acceptable carriers may be included in the composition, such as by way of example only, emollients, surfactants, humectants, powders and other solvents. By way of example only, the cosmetic composition also may include additional components, which serve to provide additional aspects of the

cosmetic affect or to improve the stability and/or administration of the cosmetic. Such additional components include, but are not limited to, preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, astringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances. Suitable materials which serve the additive functions listed here are well known in the cosmetic industry. A listing of the additive function and materials suitable for incorporation into the cosmetic composition may be found in Appendix A, which is appended hereto at the end of the specification. Further information may be obtained by reference to The Cosmetic Bench Handbook, Cosmetics & Toiletries; C.C. Urbano, editor, Allured Publ. Corp., 1996, which is hereby incorporated in its entirety by reference.

A brief description of some preferred additives and cosmetically active agents follows. The compositions of the invention include a safe and effective amount of a cosmetically active agent. "Safe and effective", as it is used herein, means an amount high enough to significantly positively modify the condition to be treated or the cosmetic effect to be obtained, but low enough to avoid serious side effects.

Preservatives can be desirably incorporated into the cosmetic compositions of the invention to protect against the growth of potentially harmful microorganisms.

Suitable preservatives include, but are not limited to, alkyl esters of para-hydroxybenzoic acid, hydantoin derivatives, parabens, propionate salts, triclosan tricarbanilide, tea tree oil, alcohols, farnesol, farnesol acetate, hexachlorophene and quaternary ammonium salts, such as benzolconjure, and a variety of zinc and
5 aluminum salts. Cosmetic chemists are familiar with appropriate preservatives and may select that which provides the required product stability. Preservatives are preferably employed in amounts ranging from about 0.0001% to 2% by weight of the composition.

Emollients can be desirably incorporated into the cosmetic compositions of the
10 invention to provide lubricity to the formulation. Suitable emollients may be in the form of volatile and nonvolatile silicone oil, highly branched hydrocarbons and synthetic esters. Amounts of emollients may be in the range of about 0.1-30 wt%, and preferably about 1-20 wt%. By way of example only, suitable silicones include cyclic or linear polydimethylsiloxanes, polyalkylsiloxanes, polyalkylarylsiloxanes and
15 polyether siloxanes. By way of example only, suitable ester emollients include alkenyl esters of fatty acids, polyhydric alcohols, such as ethylene glycol mono and di-fatty acid esters, polyethylene glycol and the like, ether-esters, such as fatty acid esters of ethoxylated fatty alcohols, wax esters, such as beeswax, spermaceti, myristyl myristate and stearyl stearate, and sterol esters, such as cholesterol fatty acids.

20 A variety of oily emollients may be employed in the compositions of this invention. These emollients may be selected from one or more of the following classes: 1. Triglyceride esters such as vegetable and animal fats and oils. Examples include castor oil, cocoa butter, safflower oil, cottonseed oil, corn oil, olive oil, cod liver oil, almond oil, avocado oil, palm oil, sesame oil, squalene, Kikui oil and
25 soybean oil; 2. Acetoglyceride esters, such as acetylated monoglycerides; 3. Ethoxylated glycerides, such as ethoxylated glyceryl monostearate; 4. Alkyl esters of fatty acids having 10 to 20 carbon atoms, such as, methyl, isopropyl, and butyl esters of fatty acids, and including hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate decyl stearate,
30 isopropyl isostearate, diisopropyl adipate, diisohexyl adipate, dihexyldecyl adipate,

diisopropyl sebacate, lauryl lactate, myristyl lactate, and cetyl lactate; 5. alkenyl esters of fatty acids having 10 to 20 carbon atoms, such as oleyl myristate, oleyl stearate, and oleyl oleate and the like; 6. fatty acids having 10 to 20 carbon atoms, such as pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic, oleic, linoleic, ricinoleic, arachidic, behenic, and erucic acids and the like; 7. fatty alcohols having 10 to 20 carbon atoms, such as, lauryl, myristyl, cetyl, hexadecyl, stearyl, isostearyl, hydroxystearyl, oleyl, ricinoleyl, behenyl, erucyl, and 2-octyl dodecanyl alcohols are examples of satisfactory fatty alcohols and the like; 8. fatty alcohol ethers, such as ethoxylated fatty alcohols of 10 to 20 carbon atoms including the lauryl, cetyl, stearyl, isostearyl, oleyl, and cholesterol alcohols. having attached thereto from 1 to 50 ethylene oxide groups or 1 to 50 propylene oxide groups; 9. ether-esters such as fatty acid esters of ethoxylated fatty alcohols; 10. Lanolin and derivatives. such as lanolin. lanolin oil. lanolin wax. lanolin alcohols, lanolin fatty acids. isopropyl lanolate. ethoxylated lanolin. ethoxylated lanolin alcohols. ethoxylated cholesterol. propoxylated lanolin alcohols. acetylated lanolin alcohols. lanolin alcohols linoleate. lanolin alcohols ricinoleate. acetate of lanolin alcohols ricinoleate. acetate of ethoxylated alcohols-esters. hydrogenolysis of lanolin, ethoxylated hydrogenated lanolin. ethoxylated sorbitol lanolin. and liquid and semisolid lanolin absorption bases and the like; 11. polyhydric alcohol esters, such as. ethylene glycol mono and di-fatty acid esters. diethylene glycol mono-and di-fatty acid esters. polyethylene glycol (200-6000) mono-and di-fatty acid esters. propylene glycol mono- and di-fatty acid esters. polypropylene glycol 2000 monooleate. polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters. polyglycerol polyfatty esters, ethoxylated glyceryl monostearate, 1,2-butylene glycol monostearate, 1,2-butylene glycol distearate. polyoxyethylene polyol fatty acid ester, sorbitan fatty acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory polyhydric alcohol esters; 12. wax esters such as beeswax. spermaceti, myristyl myristate, stearyl stearate; 13. beeswax derivatives, e.g. polyoxyethylene sorbitol beeswax; 14. vegetable waxes including carnauba and candelilla waxes; 15. phospholipids such as lecithin and derivatives; 16. sterol including cholesterol and cholesterol fatty acid

esters; 17. amides such as fatty acid amides, ethoxylated fatty acid amides, solid fatty acid alkanolamides.

Humectants may be added to the composition to increase the effectiveness of the emollient, to reduce scaling, to stimulate removal of built-up scale and improve skin feel. By way of example only, suitable humectants include polyhydric alcohols, such as glycerol, polyalkylene glycols, alkylene polyols their derivatives, propylene glycol, dipropylene glycol, polypropylene glycol, polyethylene glycol, sorbitol, hydroxypropyl sorbitol, hexylene glycol, 1,3-butylene glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and the like. The amount of humectant may be in the range of about 0.5-30 wt% and preferably between 1-15 wt%.

In topical skin care applications, a variety of active substances may be advantageously employed. By way of example only suitable active agents which may be incorporated into the cosmetic composition include anti-aging active substances, anti-wrinkle active substances, hydrating or moisturizing or slimming active substances, depigmenting active substances, substances active against free radicals, anti-irritation active substances, sun protective active substances, anti-acne active substances, firming-up active substances, exfoliating active substances, emollient active substances, and active substances for the treating of skin disorders such as dermatitis and the like.

By way of example only, in the case of hydration, one or more moisturizers may be used, such as glycerin or urea, in combination with one or more precursor agents for the biosynthesis of structural proteins, such as hydroxyproline, collagen peptides and the like.

By the way of example only, in case of slimming, at least one ketolytic agent or an alpha-hydroxyacid such a salicylic acid or 5-n-octanoicsalicylic acid may be used in combination with at least on liporegulating agent such as caffeine.

By way of example only, in the case of depigmentation, at least one keratolytic agent is used in combination with a depigmenting agent such as hydroquinone, tyrosinasee inhibitor (kolic acid), ascorbic acid, kojic acid and sodium metabisulfite and the like.

By way of example only, in the case of protection against free radical agents, vitamin E (against COO^\cdot radicals), superoxide dismutase (against O_2^\cdot free radicals) and sugar and caffeine (against OH^\cdot free radicals).

By way of example only, in the case of anti-aging, moisturizers, sunscreens,
5 alpha-hydroxyacids, salicylic acid or surface restructuring agents may be used in combination with enzymes for the repair of DNA, vascular protective agents or phospholipids rich in oligoelements and polyunsaturated fatty acids.

By way of example only, in the case of anti-acne agents, keratolytics, such as salicylic acid, sulfur, lactic acid, glycolic, pyruvic acid, urea, resorcinol and N-
10 acetylcysteine, and retinoids, such as retinoic acid and its derivatives may be used.

By way of example only, in the case of anti-inflammation, non-steroidal anti-inflammatory agents (NSAIDS) may be used, such as propionic acid derivatives, acetic acid, fenamic acid derivatives, biphenylcarboxylic acid derivatives, oxicams, including but not limited to aspirin, acetaminophen, ibuprofen, naproxen, benoxaprofen,
15 flurbiprofen, fenbufen, ketoprofen, indoprofen, piroprofen, carprofen, and bucloxic acid and the like.

By way of example only, in the case of antibiotics and antimicrobials may be included in the composition of the invention. Antimicrobial drugs preferred for inclusion in compositions of the present invention include salts of β -lactam drugs,
20 quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methenamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole and
25 amanfadine and the like.

By way of example only, in the case of sunscreen protection, suitable agents include 2-ethylhexyl p-methoxycinnamate, 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenyl p-methoxycinnamate, 2-ethylhexyl octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-t-
30 butyldibenzoylmethen, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-

methylenbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof and the like. The sunscreens disclosed therein have, in a single molecule, two distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range. These sunscreens provide higher efficacy, broader UV absorption, lower skin penetration and longer lasting efficacy relative to conventional sunscreens. Generally, the sunscreens can comprise from about 0.5% to about 20% of the compositions useful herein. Exact amounts will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF). SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

By way of example only, in the case of sunless tanning agents include, dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like.

The composition may include cleansing surfactants. Cleansing surfactants are cationic, anionic, amphoteric or non-ionic surfactants which are water-soluble and produce a consumer-acceptable amount of foam. Nonionic surfactants are well-known materials and have been used in cleansing compositions. Therefore, suitable nonionic surfactants include, but are not limited to, compounds in the classes known as alkanolamides, block copolymers of ethylene and propylene, ethoxylated alcohols, ethoxylated alkylphenols, alkyl polyglycosides and mixtures thereof. In particular, the nonionic surfactant can be an ethoxylated alkylphenol, i.e., a condensation product of an alkylphenol having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to at least about 8 moles ethylene oxide per mole of alkylphenol. Examples of compounds of this type include nonylphenol condensed with about 9.5 moles of ethylene oxide per mole of phenol; dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol; dinonylphenol condensed with about 15 moles of ethylene oxide per mole of phenol; octylphenol condensed with about ten moles of ethylene oxide per mole of phenol; and diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of

phenol.

A wide variety of acids, bases, buffers, and sequestrants can be utilized to adjust and/or maintain the pH and ionic strength of the compositions useful in the instant invention. Materials useful for adjusting and/or maintaining the pH and/or the ionic strength include sodium carbonate, sodium hydroxide, hydrochloric acid, phosphoric acid, sulfuric acid, acetic acid, sodium acetate, sodium hydrogen phosphate, sodium dihydrogen phosphate, citric acid, sodium citrate, sodium bicarbonate, triethanolamine, EDTA, disodium EDTA, tetrasodium EDTA, and the like.

The polymer network may be useful as a solubilization agent in cosmetic and personal care applications. A self-assembling system comprising the reversibly gelling polymer network exhibits thermogelation, pH sensitivity, and the ability to solubilize hydrophobic agents in aqueous media. When poloxamer is copolymerized with poly(acrylic acid) (PAA) according to the invention, the resulting copolymer network is bioadhesive and can be applied in a number of therapies. The materials described in this invention combine "reverse" thermoviscosification mucoadhesion, solubilization of hydrophobic and difficult to manage moieties, easy formulation, and protection of agents from degradation to provide a superior medium for cosmetic and personal care products.

The reversible viscousification of the polymer network at elevated temperatures makes the materials ideal for use as thickening agents in cosmetic and personal care products at any temperature above the transition. Another use of the "thickening" of solutions containing the polymer network as a thickener supplement in emulsions. Currently emulsifiers are often negatively effected by increased temperatures. An additive with reverse thermal viscousification properties, however, would react in exactly the opposite way, increasing its ability to emulsify as it gained three-dimensional structure upon heating above its transition temperature.

In the applications where the reversibly gelling polymer composition can act as a surfactant, the polymer network will have the ability to act as a primary emulsifier without any (or with very little) addition of traditional surfactant. The responsive polymer network will also act as a stabilizer for oil-soluble ingredients that would

conventionally need to be solubilized by oils in formulation. The hydrophobic portion of the polymer network (PPO) forms domains which act as reservoirs for an oil-soluble or hydrophobic additive, such as an oil droplet, as is illustrated in Figure 9.

These two features of the material of the invention would enable it to be used as a base in a cosmetic formulation that would be non-greasy due to lack of oils, such as petrolatum and mineral oil. The increase in viscosity above the transition temperature adds structure and yield value to the water phase and results in a highly stable emulsion.

Thus, poloxamer:poly(acrylic acid) polymer network compositions are valuable materials in the formulation of cosmetic and personal care products. In particular, they may be useful as rheology modifiers, provide a cushioning effect on the skin, offer barrier properties and controlled release of actives. In addition, the polymer composition may serve as a surfactant and is compatible with most ingredients used in the cosmetic industry.

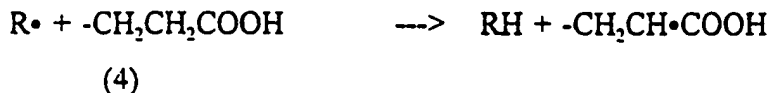
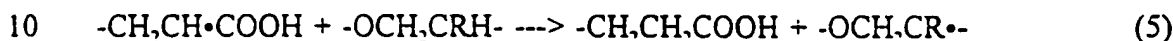
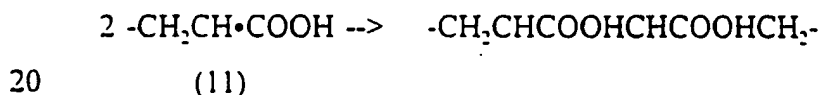
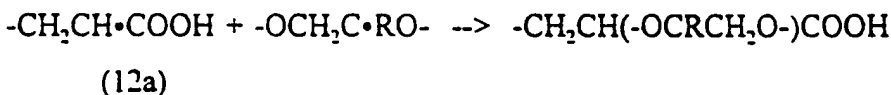
The above properties of the poloxamer:poly(acrylic acid) polymer network provides a cosmetic composition that spreads evenly and smoothly and which leaves a lubricious feel to the skin. A sensory evaluation was conducted with seven random volunteers in order to determine the sensory effect of a cream formulation on the skin. An oil-free cosmetic formulation was prepared substantially as set forth in Example 33(b) and was compared to Nivea Oil Free, a product of Beiersdorf of Germany. Volunteers placed unmarked samples on the skin and evaluated the formulation based upon its feel and texture. The samples were rated on a scale of 1 (bad) to 5 (good). The oil-free cosmetic formulation of the present invention scored equally to the Nivea Oil Free moisturizing product. Both samples scored a 3.5 on the rating scale.

The observed thermal behavior of the reversibly gelling polymer network suggests that the increase in viscosity is due to aggregation of the hydrophobic portion of the poloxamer at the transition temperature which, because of bonding with the poly(acrylic acid) component, serve as temporary cross-links which physically bridge adjacent chains of poly(acrylic acid) to provide a viscous gel-like extended polymer structure. The aggregation process may be understood as occurring as shown in Figure

10, in which a backbone 20 represent poly(acrylic acid), a thin band 24 represents the hydrophobic poly(propylene) glycol region of the poloxamer and a thick band 26 represents the hydrophilic poly(ethylene glycol) region of the poloxamer. Below the transition temperature, the polymer network is randomly arranged, as is shown in Figure 10(a). At or above the transition temperature, the hydrophobic regions 24 associate to form aggregations or micelles 28, as is shown in Figure 10(b). The association increases the effective molecular weight of the polymer network composition with the corresponding increase in viscosity.

A general method of making the poloxamer:PAA polymer network compositions of the present invention comprises solubilization of the poloxamer in acrylic acid monomer, followed by polymerization of the monomer to PAA. Polymerization may be accomplished by addition of a polymerization initiator or by irradiation techniques. The initiator may be a free radical initiator, such as chemical free radical initiators and uv or gamma radiation initiators. Conventional free radical initiators may be used according to the invention, including, but in no way limited to ammonium persulfate, benzoin ethyl ether, benzyl peroxide, 1,2'-azobis(2,4-dimethylpentanitrile) (Vazo 52) and azobisisobutyronitrile (AIBN). Initiation may also be accomplished using cationic or ionic initiators. Many variations of this methods will be apparent to one skilled in the art and are contemplated as within the scope of the invention. For example, the poloxamer component may be dissolved in an acrylic acid/water mixture instead of pure monomer. It may be desirable to remove unreacted monomer and/or free poloxamer from the resultant polymer network. This may be accomplished using conventional techniques, such as, by way of example, dialysis or Soxhlet extraction.

Without intending to be bound by a particular mechanism or structure, the following scheme represents a possible chemical mechanism for the formation of the system here described. These mechanisms are presented by way of explanation and are no way limiting of the invention. It is contemplated that these or other mechanistic routes may in fact occur in the formation of the polymer network of the present invention.

I. InitiationII. Hydrogen AbstractionIII. Chain TransferIV. PropagationV. Side Chain Branching Off AA BackboneVI. AA Branching off Poloxamer BackboneVII. Homogenous TerminationVIII. Heterogenous Termination with bonding of Pluronic to PAA

The scheme for bonding of poloxamer to acrylic acid may involve initiation (eq 1), hydrogen abstraction from the propylene or ethylene moiety of the poloxamer (eq 3), and attachment to acrylic acid via addition across the unsaturated bond (eq 10). Propagation (eq 8) leads to the final PAA.

Alternatively, the mechanism may proceed by initiation according to eqs. (1) and (2), propagation to form PAA (eq.8), a chain transfer reaction to generate a reactive poloxamer moiety (eq. 5), followed by addition of the reactive poloxamer

moiety to the unsaturated bond of acrylic acid (eq. 10) and subsequent propagation of the PAA chain.

Thus the polymer network may include a plurality of poly(acrylic acid)) units bonded to a single poloxamer unit or, alternatively, a plurality of poloxamer units bound to a single PAA backbone. Combinations of these alternatives are also a possibility.

Reverse phase polymerization may be used to prepare polymer network beads by dispersion of the poloxamer and acrylic acid monomer mixture in a nonpolar solvent such as hexane or heptane. The aggregating polymer/monomer solution is dispersed with agitation in the nonpolar solvent in order to suspend droplets of the solution. Polymerization of the monomer is initiated by conventional means (i.e., addition of a initiator or irradiation) in order to polymerize the monomer and form responsive polymer network beads. See, U.S.S.N. 08/276,532 filed July 18, 1995 and entitled "Useful Responsive Polymer Gel Beads" for further information on the preparation of polymer gel beads. herein incorporated by reference. Such a method may be particularly desirable to provide a heat sink for the heat generated in the exothermic polymerization reaction.

The polymer network complexes and aqueous gelling solutions of the present invention may be understood with reference to the following examples, which are provided for the purposes of illustration and which are in no way limiting of the invention.

Example 1 This example describes the synthesis of a polymer network and an aqueous responsive polymer network solution prepared using a triblock polymer of poly(ethylene glycol) and poly(propylene glycol), Pluronic® F27 polyol, and poly(acrylic acid). This example also characterizes the gelation and the physical properties of the resultant polymer network.

Synthesis. Block copolymer of poly(propylene glycol) (PPG) and poly(ethylene glycol) (PEG) having triad ABA structure $(\text{PEG})_A(\text{PPG})_B(\text{PEG})_A$ (Pluronic® F127 NF polyol, Poloxamer 407 NF polyol, where "F" means Flakes, "12" means 12X300=3600 - MW of the PPG section of the block copolymer, "7" PEG in

the copolymer is 70 wt%, and nominal molecular weight is 12,600) from BASF (3.0 g) was dissolved in 3.0 g acrylic acid (Aldrich). This represents a substantially 1:1 weight ratio of Pluronic® F127 polyol and poly(acrylic acid). The solution was deaerated by N₂ bubbling for 0.5 h and following addition of 100 ml of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70 °C for 16 h resulting in a transparent polymer.

Viscosity measurements. A known amount of the resultant polymer was suspended in 100 ml deionized water into which NaOH was added. Following swelling for 3 days while stirring, the pH of the resulting fine suspension was adjusted to 7. Samples of 15 ml each were taken, and pH in each vial was adjusted to desired value by addition of 1 M HCl or NaOH. Samples were then kept overnight and their viscosities were measured at different temperatures using Brookfield viscometer using either an SC4-18 or an SC4-25 spindle.

A control experiment was done with a physical blend of Pluronic® F127 polyol and poly(acrylic acid) (MW 450,000) available from Aldrich. Pluronic® F127 polyol and poly(acrylic acid) were dissolved together in deionized water at 1 wt% total polymer concentration and the resultant solution was adjusted to pH 7, stirred and kept in refrigerator. The responsiveness of the polymer network composition and the physical blend to temperature and pH is illustrated in Figs. 1, 11 and 12. Figs. 1 and 2 clearly demonstrate that the synthetic route outlined above resulted in a polymer network system that is sensitive to pH and temperature of the environment. Note that the liquid-gel transition is very sharp, occurring over a very small temperature change or pH (see, Figure 11). Figure 12 is a viscosity vs. temperature graph comparing the gelling characteristics of the responsive polymer network composition and the physical blend. The blend prepared by physically mixing of the triblock PEG/PPG/PEG polymer and poly(acrylic acid) did not exhibit viscosifying effect either as a function of temperature or pH.

It was generally observed that 0.5-5 wt% polymer network compositions made of Pluronic® F127 polyol and poly(acrylic acid) viscosify at temperatures of around 30 °C and higher if pH is adjusted to 6 or higher. The gelling effect was observed in

polymer network compositions standing 3 months or longer. Repeated heating and cooling of responsive polymer network compositions did not cause deterioration of the polymer network or the gelling effect. Solutions of either Pluronic® F127 polyol or poly(acrylic acid) (1-5 w% in water, adjusted to pH 6 or higher) or physical blends of the two lacked the reverse thermal gelling effects found for polymer network compositions.

Example 2. This example describes a standard operating procedure for the manufacture of the reversible gelling polymer network.

The procedure is based upon a 50 liter production. A NaOH solution was prepared by dissolving 131.8 g NaOH pellets in 131.8 mL DI water (50% solution). The NaOH was allowed to dissolve completely. The NaOH solution will be used to convert a percentage of the acrylic acid to sodium acrylate in situ. Acrylic acid monomer (4 kg) is charged into a monomer feed tank and agitated at 250 rpm. NaOH is added slowly. The precipitate formed as the acrylic acid is neutralized to sodium acrylate is allowed to dissolve. Pluronic® F127 (3.5 kg) is slowly added to the monomer feed tank. Pluronic® F127 is dissolved under continued agitation. Norpar 12 (a refined C-12 alkane) is added to the reaction vessel (37 L). The mixture is agitated at 100 rpm. Stabilizer solution of Ganex V-126 is prepared in 2L Norpar 12 and added to the reactor under agitation.

A reaction vessel was degassed using a nitrogen sparge introduced from the bottom of reactor and was continued throughout the reaction. Initiator (13.63 g Lauryl peroxide and 4.23 g Vazo 52 in 0.7 kg acrylic acid monomer) is introduced into the monomer solution. The monomer solution was transferred to the reaction vessel. Agitation was increased to 150 rpm. Nitrogen sparging continued for an additional 20 minutes and then heating began. Heating began at a rate of 0.5-1.0 °C/min up to 75 °C. The reaction began to exotherm at about 45-50 °C and is allowed to continue without cooling until a maximum is reached. It is then cooled to 75 °C using forced cooling. The reaction continued for 12 hours and was then cooled to 35 °C. The slurry was transferred into pails and the polymer beads were allowed to settle.

The slurry was filtered through Buchner Funnels with filter paper (11 µm pore

size) until the bulk of the Norpar had been removed from the beads. The beads were washed three times with heptane. The filtered beads were transferred to a Pyrex drying tray and spread on the tray in a uniform layer. The beads were dried under vacuum for 4 hours at 40-50 °C. The dried beads were analyzed as follows.

5 Elemental analysis. The elemental analysis was performed by Quantitative Technologies, Inc., Whitehouse, NJ using a Perkin Elmer 2400 CHN Elemental Analyzer. Analysis provided C (52.49%), H (7.50%), N (< 0.05%), the balance assumed to be oxygen (39.96%).

10 Thermal Gravimetric Analysis (TGA). The TGA method was performed by Massachusetts Material Research, Inc., West Boylston, MA using a Dupont TGA model 295. The assay was run using a temperature ramp from 30 to 500 °C/min. The resolution for the system was set to 4 (1.0 °C/min for all slope changes). The data was analyzed using the first derivative of the curve and using maxima and minima to mark transitions. The moisture content was also calculated in this manner. The first
15 derivative yielded three maxima. The first transition (moisture) was 3.0% by weight. the second transition was 14.0% by weight and the third was 67.02% by weight. Residue (15.98% remained).

20 Molecular weight determination by gel permeation chromatography (GPC). The molecular weight was determined by GPC on a Hewlet Packard 1100 Liquid Chromatography system with a Viscotech T60 Triple Detector system. Three Waters Ultrahydrogel columns, 1000, 500 and 250 Å, were used for the separation. The
25 mobile phase was 0.1M NaNO₃ and 0.01M K₂HPO₄ salt solution, pH adjusted with phosphoric acid to a pH of 8.0 ± 0.1. The flow rate for the separation was 0.9 mL/min. The column temperature was maintained at 15 °C. The injection volume for the assay was 50 µL. A PEG molecular weight standard of 23,000 Daltons was used to align the detectors. The result for the assay were:

M_n : 341,700 Daltons

M_p : 1,607,000 Daltons

M_w : 2,996,000 Daltons

30 Free poloxamer determination by GPC. The amount of free (unbound)

poloxamer in the polymer matrix was determined using the above GPC method and comparing the poloxamer peaks to that of a standard poloxamer solution. The typical result is approximately 17-22% free poloxamer by weight.

5 The effect of both the bonded and non-bonded poloxamer on the gelation properties of the responsive polymer network has been determined by extraction of the non-bonded poloxamer from the material. Such extraction studies have established that the graft co-polymer alone exhibits the characteristic reverse thermal gelation of the composition; however, the presence of non-bonded poloxamer component modulates the gelation process. The non-bonded poloxamer component
10 can affect the temperature of transition (from liquid to gel) and the degree of transition and assists in a more controlled and reproducible transition.

Bound poloxamer determination by ethylene oxide (EO) titration. The EO titration was performed as follows. A 5 gm sample of the product polymer was extracted in dichloroethane for three hours at reflux temperatures. The solid is
15 removed and dried under a vacuum for 12 hours at room temperature. The dry material is then analyzed using ASTM method D 2959-95, "Standard Test Method for Ethylene Oxide Content". The amount of EO in the sample is related to the amount of poloxamer bound to the polymer. The typical result is approximately 15 % by weight of EO.

20 The relative amount of free poloxamer may be varied dependent upon the relative proportions of starting materials and the method of polymerization. Although the residual solids presumably contain only poloxamer which is bonded to the poly(acrylic acid), i.e., a graft co-polymer, the material still shows strong viscosification when it is neutralized and dissolved in water. However, the
25 temperature of viscosification is increased substantially and the degree of viscosification per gram of total solids is increased by removal of free poloxamer. Thus, the free poloxamer plays a role in modifying the extent and temperature of viscosification. The poloxamer undergoes conformational changes and changes to the critical micelle concentration as a function of temperature. The poloxamer will
30 change from an open, non-aggregated form to a micellular, aggregated form with

changes in temperature.

Residual acrylic monomer determination by gas chromatography (GC). The residual acrylic acid monomer was determined by GC analysis using a Hewlett Packard GC 5890A, using a HP-FFDAP-TPA 10 m x 0.53 mm x 1 μ m column. The sample was extracted and run in methanol. Using an internal standard ratio, the sample was compared to a one point calibration. The typical results for this assay were below 70 ppm acrylic acid monomer.

Residual Norpar solvent by GC. The residual Norpar in the sample was determined by GC using the above method and comparing the Norpar peaks to that of a standard. The typical results were below 1.5 wt%.

UV-vis spectrum. Optical clarity data of UV-vis spectrophotometer was obtained. A 1.0% solution in water was prepared and measured at 420 nm. Transmittance (%) was typically greater than 90%.

Differential scanning calorimetry (DSC). The DSC was performed by Massachusetts Material Research, Inc., West Boylston, MA using a temperature ramp from 30 to 350 °C at 5 °C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The assay yielded one endothermic event at 265 °C, typically 270 J/g.

Examples 3-9. This example describes the synthesis of a several reversible thermal gelling polymer network prepared using a variety of poloxamers and poly(acrylic acid). The gelation and the physical properties of the resultant polymer network compositions are reported in Table 2.

Table 2.

example	poloxamer	poloxamer composition	polox- amer: PAA	trans. temp.	comments
3	Pluronic® F88 Prill polyol	2400 MW PPG; 80 wt% PEG; nominal MW 11,400	1:1	48 °C	viscosity response curve shown in Figure 13
4	Pluronic® F127 NF polyol	3600 MW PPG; 70 wt% PEG; nominal MW 12,600	1:1	30 °C	pentaerythritol triallyl ether crosslink agent used
5	Pluronic® P104 polyol	3000 MW PPG; 40 wt% PEG; nominal MW 5,900	1:1	28 °C	viscosity response curve shown in Figure 14
6	Pluronic® P123 polyol	3600 MW PPG; 30 wt% PEG; nominal MW 5,750	1:1	25 °C	viscosity response curve shown in Figure 15
7	Pluronic® F127/Pluronic® F108 polyol blend (1:1)	as above	1:1.7	42 °C	polymer solid formed, dried; resolubilized in neutralizing solution
8	Pluronic® F88 polyol	as above	1:1.7	80 °C	polymer solid formed, dried; resolubilized in neutralizing solution
9	Pluronic® F127/Pluronic® F88 polyol blend (1:1)	as above	1:1.7	85 °C	polymer solid formed, dried; resolubilized in neutralizing solution

Example 10. The following example demonstrates the effect of hydrophilic/hydrophobic ratio on the gelling temperature. Polymer network compositions were prepared from the following poloxamers shown in Table 3.

Table 3. Composition of poloxamers investigated.

triblock polyol polymer composition	MW of PPG block	wt% of PEG block
P103 (PEG) ₃₇ (PPG) ₃₆ (PEG) ₃₇	3250	50
P104 (PEG) ₂₅ (PPG) ₃₆ (PEG) ₂₅	3250	40
P105 (PEG) ₁₆ (PPG) ₃₆ (PEG) ₁₆	3250	30

Table 3 shows that in this series, the fraction of PEG is reduced when the molecular weight of the PPG block is kept constant. Linse (*Macromol.* 26:4437-4449 (1993)) report phase diagrams for these copolymers in water were calculated and it was shown that two-phase boundaries corresponding to the beginning of aggregation are almost unaffected by the molecular mass, given a constant PEG/PPG ratio, whereas these boundaries shifted to lower temperature as the PEG content of the polymer is reduced at constant mass. The strong dependence of the PEG/PPG ratio is a consequence of the differing solubilities of PEG and PPG in water at the elevated temperatures. Thus one would suppose that aggregation that causes viscosification in the responsive polymer network composition should shift to lower temperature as PEG fraction decreases.

The poloxamer (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N₂ bubbling for 20 min. and following addition of the 100 :1 of freshly prepared saturated solution of ammonium persulfate in deionized water was kept at 70°C for 16 h resulting in a strong whitish polymer. A sample of the polymer obtained (0.4 g) was suspended in 40 ml deionized water into which NaOH was added. Suspended responsive polymer network particles were allowed to dissolve under constant stirring. The resulting 1 wt% polymer network solutions were subjected to the viscosity measurement at shear rate of 132 or 13.2 sec⁻¹ using a SC4-18 spindle. It can be seen from Figure 16 that, firstly, viscosity of the 1 wt%

responsive polymer network solutions before viscosification (at 20-24°C) decreases in the series $(\text{PEG})_{37}(\text{PPG})_{56}(\text{PEG})_{37}(\text{F103}) > (\text{PEG})_{25}(\text{PPG})_{56}(\text{PEG})_{25}(\text{F104}) > (\text{PEG})_{16}(\text{PPG})_{56}(\text{PEG})_{16}(\text{F105})$ and, secondly, the temperature at which gelation shifts from about 45°C for $(\text{PEG})_{37}(\text{PPG})_{56}(\text{PEG})_{37}$ to about 35°C for $(\text{PEG})_{25}(\text{PPG})_{56}(\text{PEG})_{25}$ and $(\text{PEG})_{16}(\text{PPG})_{56}(\text{PEG})_{16}$. Both results are in excellent agreement with the theory set forth in Linse.

Example 11. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein hemoglobin from poloxamer:poly(acrylic acid) polymer network is described.

Synthesis. Pluronic® F127 (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N₂ bubbling for 0.5 h and following addition of 100 Fl of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer. The resultant responsive polymer network obtained (5 g) was suspended in 95 ml deionized water into which NaOH was added. The resulting suspension was allowed to swell for 7 days.

Hemoglobin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 0.25 mg/ml solution of human hemoglobin (Sigma) in deionized water adjusted to pH 8. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the hemoglobin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 0.25 mg/ml hemoglobin solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples of the receiver phase were withdrawn from time to time and their absorbance was measured spectrophotometrically at 400 nm.

To calculate hemoglobin concentrations, corresponding calibration curves (absorbance in PBS versus hemoglobin concentration) were generated. The results of the kinetic experiment are presented in Figure 17. It can be seen that the rate of hemoglobin release from the polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in the polymer network at elevated temperatures (see Figure 1). The protein released from the polymer network composition still retained its native structure, as was determined by comparison of uv-vis spectra of release hemoglobin and natural hemoglobin.

Example 12. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein lysozyme from a polymer network is reported.

Lysozyme loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 1 mg/ml solution of chicken egg-white lysozyme (Sigma) and 1.5 mg/ml sodium dodecyl sulfate (Aldrich) in deionized water adjusted to pH 8.5. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the lysozyme-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 1 mg/ml lysozyme solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples were withdrawn and their absorbance measured spectrophotometrically at 280 nm. A calibration curve was prepared for lysozyme concentration ranging from 0 mg/ml to 0.5 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 18. It can be seen that the rate of lysozyme release from the responsive polymer network composition was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

In order to demonstrate the retention of the enzymatic activity of lysozyme, the lysozyme released from the responsive polymer network composition was assayed using *Micrococcus lysodeikticus* cells and compared to that of original lysozyme. The enzymatic activity of lysozyme was the same, within the error of the assay (15%), as that of the original lysozyme. Control without lysozyme in presence of sodium dodecyl sulfate did not show any appreciable lysis of the cells.

Example 13. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of insulin from a responsive polymer network composition is reported.

Insulin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 5 mg/ml solution of bovine Zn^{2+} -insulin (Sigma) in deionized water adjusted to pH 7. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (# 2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the insulin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 5 mg/ml insulin solution. After the feed solution had been loaded into the cell, the timing commenced. Samples were withdrawn and their absorbance was measured spectrophotometrically at 280 nm. A calibration curve was prepared for insulin concentration ranging from 0 mg/ml to 1.25 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 19. The rate of insulin release from responsive polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

Example 14. This example demonstrates the preparation of a sterile reversibly gelling polymer network aqueous composition and the stability of the composition to sterilization. The polymer network is prepared as described in Example 1, except that

the composition is prepared at 2 wt% Pluronic® F127 polyol/poly(acrylic acid). After dissolution of the 2 wt% polymer network in water, the viscosity is measured. The composition then is sterilized by autoclaving at 121°C, 16 psi for 30 minutes.

5 Viscosity is determined after sterilization. The corresponding curves for viscosity (a) before and (b) after sterilization are shown in Figure 20 and establish that minimal change in the viscosity profile of the material has occurred with sterilization.

Examples 15-30. These examples show additives which may be used to affect the transition temperature overall viscosification of the polymer network composition.

10 A 1 wt% polymer network was prepared in deionized water at pH 7 in which a variety of additives were included in the composition. The effect of the additive was determined by generation of a Brookfield viscosification curve. Results are reported in Table 4.

Table 4.

Example No.	Additive (wt%)	Effect of additive on:	
		transition temp. (°C)	final viscosity (% change)
15	1,2-methyl pyrrolidone (5)	I (1.8)	N
16	Rhodapex CO-436 (2)	I (1.6)	N
17	Dow Corning 190 (2)	I (5)	I (150)
18	isopropyl alcohol (0.5)	I (3.1)	I (45)
19	Pluronic® L122 (1)	D (4.4)	D (13)
20	Pluronic® F88 (1)	N	I (41)
21	Tween 80 (0.5)	N	I (18)
22	Germaben® II (1)	D (9)	I (100)
23	Iconol NP-6 (1)	D (9)	I (500)
24	Plurafac C-17 (0.5)	I (5.2)	D (36)
25	Dow Corning 193 (0.75)	I (4.1)	D (12)
26	glycerin (5)	D (2)	N
27	UC 50-HB- 170/EO/PO random copolymer (0.5)	N	N
28	PVP K15 (1)	N	N
29	MAPTAC (1)	N	D (8)
30	potassium chloride (0.25)	N	D (34)

I = increase; D = decrease; and N = no change

Example 31. Because of the surfactant nature of the polymer network composition coupled with the gelation effect of the polymer network composition, it is possible to prepare formulation which are 100% water-based, but which are lubricous and thick.

5 Formulations including a nonionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 5.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Emulsifying Wax NF ¹	2.5
Mineral Oil	5.0

¹ Polowax available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a nonionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

20 Formulations including a cationic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 6.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Behentrimonium Methosulfate (and) Cetearyl alcohol ¹	2.5
Mineral Oil	5.0

¹ Incroquat Behenyl TMS available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount

of all ingredients is added and allowed to mix to homogeneity. This formulation contains a cationic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Formulations including an anionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 7.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Cetearyl Phosphate (and) Cetearyl alcohol ¹	2.5
Mineral Oil	5.0

¹ Crodats CES available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a anionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Example 32. Acne Medication: An oil-free, clear, anti-acne treatment is made by combining the following ingredients utilizing conventional mixing techniques:

Table 8.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network prepared as in Example 1	20.0
Glycerin USP	5.0
Salicylic Acid	2.0
DL-Panthenol	0.5
Germaben [®] II ¹	0.1
Disodium EDTA	0.2
USP Purified Water	72.2

¹ Germaben[®] II available from Sutton Laboratories

To one vessel, equipped with a Lightmin' Mixer with a 3 blade paddle prop,

the full amount of USP Purified Water to 100% w/w is added. While maintaining the temperature, with moderate to vigorous mixing, the formula amount of Disodium EDTA, Citric Acid, DL-Panthenol, Glycerin, Salicylic Acid, and Germaben® II is added. These materials are allowed to dissolve at 50°C. After dissolution, the vessel
5 is then cooled to 20°C. To another vessel, equipped with a high efficiency homogenizer, the formula amount of responsive polymer network is added. The responsive polymer network vessel is then cooled to 4°C. After cooling, while vigorously homogenizing, the contents of the first vessel is added to the second vessel, and allowed to mix to homogeneity.

10 The composition displays a flowable clear jelly appearance with excellent spreadability and absorption characteristics at room temperature, and after heating the formulation to 32°C, the composition thickens to a gel-like consistency.

Example 33. (a) Oil-free Moisturizer (formulation I): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional
15 mixing techniques:

Table 9.

Ingredient	% w/w
10% wt 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
PPG-2 Myristyl Ether Propionate	3.0
DL-Panthenol	0.5
Germaben® II ¹	0.1
Disodium EDTA	0.2
Citric Acid	0.01
USP Purified Water	71.19

¹ Germaben® II available from Sutton Laboratories

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The viscosity vs. temperature curve is shown in Figure 21 and demonstrates that addition of adjuvants to the composition significantly enhances the responsive polymer network maximum viscosity (> 900,000 cps). The use of the poloxamer:poly(acrylic acid) polymer network in the formulation also imparts a unique viscosification effect after application to the skin, which is not evident in typical commercial O/W emulsion formulations (See, Figure 21b).

(b) Oil-free Moisturizer (formulation II): An oil-free, lubricious moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 10.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	5.0
Carbopol 980	1.0
D-panthenol, propylene glycol	1.0
Preservative	1.0
Hydrolyzed protein (and) hyaluronic acid	0.5
Sodium hydroxide.	0.2
USP Purified Water	90

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to 26°C, the composition thickens to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 34. Sunscreen Lotion. An oil-free, lubricious sunscreen lotion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 11.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	8.0
Carbopol 980	1.0
Parsol MCX	7.0
Myristyl Ether Propionate	5.0
Preservative	1.0
Cyclomethicone	1.0
Sodium hydroxide	0.2
USP Purified Water	74

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C. the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 35. Facial mask. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 12.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	1.0
Polyvinyl alcohol	6.0
Polyvinylpyrrolidone (20%)	5.0
D-panthenol, propylene glycol	1.25
Propylene glycol	1.25
USP Purified Water	85.5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Facial toner. A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

Table 13.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	0.01
Hydroxyethyl cetyldimonium phosphate	1.00
PEG-40 hydrogenated castor oil	2.00
D-panthenol, propylene glycol	0.50
Glycerin	2.00
Witch hazel extract	5.00
USP Purified Water	88.49

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Solubilization studies of model hydrophobic agents in the poloxamer: poly(acrylic acid) polymer network: estradiol and progesterone. This example is presented to demonstrate the solubilization of a hydrophobic agent in the polymeric network. Progesterone and estradiol were used as the hydrophobic agents in this model solubilization study.

Acrylic acid (99%), fluorescein (98%), β -estradiol (98%), and progesterone (98%) were all obtained from Aldrich and used as received. Pluronic® F127 NF was obtained from BASF. Poly(oxyethylene-b-oxypropylene-b-oxyethylene)-g-poly(acrylic acid) copolymers (responsive polymer network) were synthesized by free-radical polymerization of acrylic acid in the presence of poloxamer as described above. The polymer network copolymers discussed here were composed of about 1:1 ratio of PAA to poloxamer. The rheological properties of polymer network were assessed using LVDV-II+ and RVDV-II+ Brookfield viscometers. The microscopic light scattering of 21 nm poly(styrene) latex particles in deionized water and 1 w% reversibly gelling polymer network was measured using He-Ne laser as described previously (See, Matsuo, E.S., Orkisz, M., Sun, S.-T., Li, Y., Tanaka, T., Macromolecules, 1994, 27, 6791). The solubility of fluorescein and hormones in aqueous solutions was measured by the equilibration of excess solubilize with the corresponding solution following removal of undissolved species by centrifugation and filtration. Hydrophobic agents were assayed spectrophotometrically at 240 (progesterone) or 280 nm (estradiol), or by using 70/30 w/w H₂SO₄/MeOH (Tsilifonis-Chafetz reagent). In vitro hormone release studies were conducted using thermostatted, vertical Franz cells. Spunbonded polypropylene microfilters (micron retention, 15-20) were used as a membrane separating feed and receiver phases in

Franz cells. The responsive polymer network, water, ethanol, and 20% PEG in water were observed to wet the membrane. The receiver solutions consisted of 20 w% PEG in water (pH 7) and were stirred by magnetic bars. The feed phases composed of responsive polymer network were loaded with either estradiol or progesterone. Each hormone was dissolved in ethanol and the resulting solution was added into the responsive polymer network.

Equilibrium solubility vs. temperature plots for estradiol and progesterone (partition coefficient octanol/water (P) 7200 and 5888, respectively, in aqueous solutions of Pluronic® F127 polyol and responsive polymer network are presented in Figure 22. It can be seen that increasing temperature and concentration (C) of polymers in the solution raises the amount of the hormone dissolved. In Figure 22a, vertical lines represent critical micellar temperatures (CMT) for corresponding Pluronic F127 polyol solutions. It is interesting to note that the slope of the solubility-temperature plots increased as temperature reached CMT, indicating that solubilization in the Pluronic solutions was predominantly due to the formation of micelles. Similar trend was observed in the responsive polymer network solutions. The S values in 5% aqueous solutions of branched PAA did not exceed 15 and 40 $\mu\text{g/mL}$ at 60 °C for estradiol and progesterone, respectively. The solubility values found for responsive polymer network were the same as S in parent Pluronic solutions of equivalent concentrations. Therefore, it may be suggested that solubilization behaviors of the responsive polymer network are governed by the properties of the poloxamer incorporated into it. Thermodynamic parameters of the solubilization process with responsive polymer network were calculated using the same approximations as in the micellar solubilization with Pluronic polyols. See, Saito, Y., Kondo, Y., Abe, M., Sato, T., Chem.Pharm.Bull., 1994, 42, 1348. Namely, partition coefficient P was estimated from equilibrium solubilities of estradiol in responsive polymer network and water:

$$P = S_{SH}/S_w \quad (13)$$

by extrapolating the solubility plots of the steroid in Figure 22 to 100 % responsive polymer network. Using P values obtained from data in Figure 23, we calculated the

standard free energy change (ΔG), standard enthalpy of solubilization (ΔH), and standard entropy of solubilization (ΔS) using the following expressions:

$$\Delta G = -RT \ln P; \Delta H = -R \Delta \ln P / \Delta(1/T); \Delta S = (\Delta H - \Delta G)/T \quad (14)$$

Thermodynamic parameters obtained along with P values are given in Table 13.

- 5 Apparent partition coefficients and thermodynamic parameters for solubilization of estradiol by responsive polymer network.

Table 13.

T, K	P=SSH/S	ΔG kJ/mol	ΔH kJ/mol	ΔS J/mol
277	490	-14.3	4.72	68.6
293	520	-15.2		52.0
310	660	-16.7		53.9
323	660	-17.4		54.0
333	660	-18.0		54.0

Negative ΔG values indicate spontaneous solubilization at all temperatures, whereas positive ΔH shows that the solubilization was endothermic, similar to the solubilization of estriol, as well as indomethacin, by the poloxamer. Notably, ΔS of solubilization was always positive, suggesting that the more ordered water molecules surrounding hydrophobic estradiol molecules moved to the less ordered bulk phase when the estradiol was transferred to the hydrophobic core of PPG segments in responsive polymer network. The aggregation of the PPG segments at elevated temperatures provides not only temporary cross-linking in the gel, but also a thermodynamically "friendly" environment for the hydrophobic drugs. Indeed, one can express the free energy of formation of the aggregate core-water interface in responsive polymer network as:

$$\Delta G = [\sigma P_w(1 - \phi) + \sigma W_D \phi](4\pi R^2/n) \quad (15)$$

where σP_w and σW_D are the interfacial tensions between pure PPO polymer and water and between water and the drug, respectively; ϕ is the volume fraction of the drug within PPO core; R is the effective radius of the core, and n is the aggregation number.

Equation (3) shows that solubilization of a hydrophobic drug of high σ_{WD} should increase the stability of the aggregate. The solubilization process was found to decrease the critical micellization concentration and substantially increase the micellar core radius in Pluronic surfactants (Hurter, P.N. *et al.*, "In Solubilization in Surfactant Aggregates", Christian, S.D., Ed., Marcel Dekker, New York, 1995). A similar trend is indicated by the lowering the onset of gelation of the responsive polymer network upon solubilization of fluorescein (LogP 2.1) (Figure 24). The solubilization of hydrophobic drugs by responsive polymer network, analogous to the micellar solubilization of drugs by poloxamer, suggests that the responsive polymer network can be an effective vehicle in drug delivery.

Our *in vitro* study of hormone release from responsive polymer network shows an increase in the initial transport rate with either decreasing total polymer concentration in the formulation or decreasing temperature (Figure 25). These effects are related to the changes in macroscopic viscosity of the responsive polymer network, which erodes more rapidly from the feed phase through the membrane into the receiver compartment as the viscosity decreases (Figure 26). The degree of the responsive polymer network erosion was measured by weighing hormone-loaded responsive polymer network before and after kinetic experiment.

Figure 27 shows that the relative amount of progesterone penetrating into the receiver phase decreased 4-fold with the increase of total polymer concentration, whereas the total relative amount of progesterone stayed almost constant as total polymer concentration in the responsive polymer network increased. This result shows the existence of two routes of transport of hydrophobic drugs in our model system. Firstly, the drug incorporated into aggregates within the responsive polymer network system can flow through the membrane along with the erosion of the responsive polymer network; secondly, the drug not associated with the responsive polymer network aggregates can diffuse out of the responsive polymer network in the feed phase. The second process should not be related to the viscosity of the responsive polymer network. Indeed, the dynamic light scattering experiment shows no dramatic change of diffusivity of poly(styrene) latex particles in the responsive polymer

network as temperature rises thereby increasing macroscopic viscosity more than 10-fold (Figure 28). This result indicates that the viscosity of the responsive polymer network is essentially unaffected on the microscopic scale.

5 Appendix A attached.

APPENDIX A

Cosmetic Bench Reference

Function Definitions

Abrasive: abrades, smoothes, polishes

Absorbent powder: takes up liquids, sponge-like action

Absorption base: forms water-in-oil emulsions

Acidulent: acidifies, lowers pH, neutralizes alkalis

Amphoteric: capable of reacting chemically either as an acid or a base; amphoteric surfactants are compatible with anionic and cationic surfactants

Analgesic: relieves pain

Antacid: neutralizes stomach acidity

Antibacterial: destroys/inhibits the growth/reproduction of bacteria

Anti-caking: prevents or retards caking of powders; keeps powders free-flowing

Anti-dandruff: retards or eliminates dandruff

Antifoam: suppresses foam during mixing

Anti-inflammatory: reduces, suppresses, counteracts inflammation

Anti-irritant: reduces, suppresses or prevents irritation

Antimicrobial: destroys, inhibits or suppresses the growth of microorganisms

Antioxidant: inhibits oxidation and rancidity

Antiperspirant: reduces or inhibits perspiration

Antipruritic: reduces or prevents itching

Antiseptic: inhibits the growth of microorganisms on the skin or on living tissue

Antistat: reduces static by neutralizing electrical charge on a surface

Astringent: contracts organic tissue after application

Binder: promotes cohesion of powders

Bleaching agent: lightens color, oxidizing agent

Botanical: natural plant derivative

Buffer: helps maintain original pH (acidity or basicity) of a preparation

Carrier: a vehicle or base used for a preparation

Chelate: form a complex with trace-metal impurities, usually calcium or iron

Colorant: adds color, may be a soluble dye or an insoluble pigment

Conditioner: improves condition of skin and hair

Coupling agent: aids in solubilization or emulsification of incompatible components

Decolorant: removes color by adsorption, bleaching or oxidation

Denaturant: used to denature ethyl alcohol

Dental powder: powdered dentifrice

Deodorant: destroys, masks or inhibits formation of unpleasant odors

Depilatory: removes hair chemically

Detergent: a surface-active agent (surfactant) that cleans by emulsifying oils and suspends particulate soil

Disinfectant: destroys pathogenic microorganisms

Dispersant: promotes the formation and stabilization of a dispersion or suspension

Dye stabilizer: see Stabilizer

Emollient: softens, smoothes skin

Emulsifier: a surface-active agent (surfactant) that promotes the formation of water-in-oil or oil-in-water emulsions

Enzymes: complex proteins produced by living cells that catalyze biochemical reactions at body temperature

Fiber: strands of natural or synthetic polymers; for instance, cotton, wool, silk, nylon, polyester

Film former: solution of a polymer that forms films when the solvent evaporates after application to a surface

Fixative: fixes or sets perfumes; retards evaporation; promotes longer lasting aroma

Flavor: imparts a characteristic taste (and aroma) to edible foods and drinks; sometimes used in lip products

Foam booster: enhances quality and quantity of lather of shampoos

Foamer: a surface-active agent (surfactant) that produces foam; an emulsion of air-in-water

Foam stabilizer: see Foam booster

Fungicide: inhibits or destroys growth of fungi

Gellant: a gelling agent; forms gels; includes a wide variety of materials such as polymers, clays and soaps

Glosser: furnishes a surface luster or brightness; usually used in lip or hair products

Hair colorant: see Colorant

Hair conditioner: see Conditioner

Hair dye: imparts a new permanent or semi-permanent color to hair

Hair-set polymer: polymer and/or resins used to maintain desired hair shape

Hair-set resin: see Hair-set polymer

Hair waving: see Reducing agent and Neutralizer

Humectant: absorbs, holds and retains moisture

Hydrotrope: enhances water solubility

Intermediate: basic chemicals which are chemically modified to obtain the desired function

Lathering agent: a surface active agent (surfactant) that forms a foam or lather on mixing with air in solution; see also Foamer

Lubricant: reduces friction, smoothes, adds slip

Moisture barrier: retards passage of moisture or water

Moisturizer: aids in increasing the moisture content of the skin through humectant or barrier action

Neutralizer: an oxidizing agent used in hair waving that stops the action of the reducing agent and re-establishes the disulfide linkages in hair

Oil absorbent: see Absorbent powder

Ointment base: an anhydrous mixture of oleaginous components used as a vehicle for medicaments

Opacifier: opacifies clear liquids or solids

Oxidant: oxidizing agent, neutralizes reducing agents, bleaching agent

Pearlant: imparts a pearlescent texture and luster

Perfume solvent: see Solvent and Solubilizer

Peroxide stabilizer: see Stabilizer

Pigment: a finely powdered insoluble substance used to impart color, luster or opacity

Plasticizer: plasticizes (makes more flexible) polymeric films or fibers

Polish: smoothes; adds gloss and luster

Polymer: a very high molecular weight compound consisting of repeating structural units

Powder: a solid in the form of fine particles

Preservative: protects products from spoilage by microorganisms

Propellant: pressurized gas in a container used to expel the contents when pressure is released by opening a valve

Protein: naturally occurring complex combinations of amino acids

Reducing agent: reduces a chemical compound usually by donating electrons; neutralizes oxidizing agents

Refatting agent: adds oils materials to the surface of substrates, e.g., skin and hair

Resin: nonvolatile solid or semisolid organic substances obtained from plants as exudates to prepared by polymerization of simple molecules

Sequestant: forms coordination complexes with multivalent positive ions

Silicone: polymeric organic silicon compounds which are water resistant

Skin protectant: protects skin from environmental

Solubilizer: solubilizes, usually into aqueous vehicles, normally insoluble materials, such as fragrances, flavors, oils, etc.

Solvent: usually liquids capable of dissolving other substances

Stabilizer: added to stabilize emulsions and/or suspensions

Stimulant: produces a temporary increase in the functional activity of an organism or any of its parts

Surfactant (surface-active agent): lowers surface tension between two or more incompatible phases; soaps, detergents, wetting agents, solubilizing agents and emulsifying agents are typical surfactants; surfactants are classified as anionic, cationic, nonionic and amphoteric; anionic surfactants are negatively charged, cationic surfactants have no electrical charge

Suspending agent: keeps finely divided solid particles in suspension

Sweetener: sweetens to provide a more pleasant taste

Tanning accelerator: accelerates the tanning of skin

Thickener: thickens or increases viscosity/consistency

Thixotrope: the property of certain gels and emulsions of becoming more fluid or less viscous when shaken or stirred

UV absorber: used as a sunscreen and to protect preparations from degradation by UV radiation

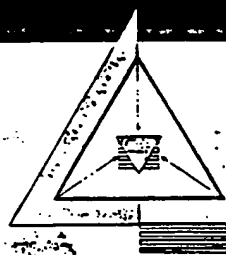
UVA absorber: absorbs in the range 320-400 nanometers (nm)

UVB absorber: absorbs in the range 290-320 nanometers (nm)

Wax: any of numerous substances of plant, animal or synthetic origin that contain principally esters of higher fatty acids and higher fatty alcohols; free fatty alcohols, fatty acids and hydrocarbons may also be present; waxes derived from petroleum products are mainly high-molecular-weight hydrocarbons

Wetting agent: a surface-active agent (surfactant) that lowers the surface and interfacial tension, facilitating the wetting of surfaces

From the Editors of *Cosmetics & Toiletries* magazine



Hair Care

Adsorption of cationic polymers

— D. Coddard and R. Schmitt

Ceramide — D. Broida et al

Melanins — K.C. Brown and G. Prota

Men's hair coloring — S. Cusperson

Skin permeation of hair dyes — H. Beck et al

African-American hair — A. Syed et al

Ethnic hair care — A. Syed

Hair curl relaxers — P. Obukowho and M. Birman

Cysteine waving lotions — A. Iwasaki

Keeping VOCs under control — S. Price

Soft cover

69 pages

Published 1996

ISBN: 0-931710-47-2

International airmail: \$6

Price: \$64



A New Book Compiles The Very Best in Hair Research

The Applied Research Series pulls together the very best papers on scientific advances and research. Featuring the latest technical information, formulating advice and ingredient reviews, this book is an ideal addition to your research library.

I would like _____ copies of the Hair Care book (Payment required with order)

☐ Payment enclosed, US\$64 per copy. (US funds drawn on a US bank only.)

Please add US\$6 per copy for all international airmail orders.

☐ Charge my ☐ VISA ☐ MasterCard

Card Number

Expiration Date

Name as it appears on card (Please Print)

Signature

Name (Please Print)

Company

Address

City/State/Postal Code

Country

Telephone (include area code)

Fax (include area code)

e-mail address

CBR

All subscriptions sold on a non-refundable basis • Prices subject to change

Send your order with payment to: Allured Publishing Corp.

362 S. Schmale Road • Carol Stream IL 60188 USA • Phone: 708/653-2155 • Fax: 708/653-2192

Functions

Abrasive

Adzuki beans
Almond (Prunus amygdalus) meal, shell granules
Aluminum silicate
Apricot (Prunus armeniaca) kernel powder, shells
Hydrated silica
Jojoba (Buxus chinensis) seed powder
Luffa cylindrica
Olive stone granules
Oyster shell powder
Peach (Prunus persica) pit powder
Peach (Prunus persica) stone granules
Polyethylene
Polyethylene HEC granules
Polyethylene oxidized, P. sphenes
Polystyrene
Pumice
Rice (Oryza sativa) bran
Silica and S. colloidal
Sodium chloride
Walnut (Juglans regia) shell powder

Absorption base

1,2,6-Hexanetriol
Kaolin
Petrolatum
Rice (Oryza sativa) starch
Soy (Glycine soja) sterol
Zeolite

Absorbent powder

Corn (Zea mays) starch
Maltodextrin
Nylon-12
Oat (Avena sativa) bran, flour, meal
Zeolite

Acidulent

Acetic acid
Citric acid
Fumaric acid
Glutamic acid
Glycolic acid

Hydrochloric acid

Lactic acid
Nitric acid
Phosphoric acid
Sodium bisulfate
Sulfuric acid
Tartaric acid

AHA

Apple (Pyrus malus) extract
Apricot (Prunus armeniaca) kernel powder
Citric acid
Ethyl lactate
Glycolic acid
Lactic acid
Malic acid
Sodium lactate
Tartaric acid

Antiacne

Clays (white, yellow, red, green, pink)
Perfluorodecalin
Salicylic acid
Sulfur

Anti-aging

Basil (Ocimum basilicum) extract
Carrot (Daucus carota) extract
Catalpa kaempferia extract
Ceramide 33 (liquid soy extract)
Crataegus cuneata extract
Eugenia jambolana extract
Fomes fomentarius extract
Fomopsis pinicola extract
Ganoderma lucidum oil
Ginseng (Panax ginseng) extract
Hyaluronic acid
Hydrolyzed serum protein
Hydrolyzed soy flour
Isachne pulchella extract
Lactoferrin
Lady's Thistle (Silvum marianum) extract
Ligusticum jeholense extract

Marine collagen

Mushroom (Coriolus versicolor) extract
Musk rose (Rosa moschata) oil
Perfluorodecalin
Quaternium-51
Rubus thunbergii extract
Serum protein
Stenocalyx micalii extract
Tricholoma matsutake extract

Antibacterial

Ammonium iodide
Chlorhexidine
Chlorhexidine diacetate, C. digluconate
Chlorhexidine dihydrochloride
Chlorphenesin
Hexamidine diisethionate
Hexetidine
Iceland moss (Cetraria islandica) extract
Lactoferrin
Lauralkonium bromide, L. chloride
Laurtrimonium chloride
Laurylpyridinium chloride
Mauritiella armata extract
Mushroom (Cordyceps sabolifera) extract
Orange blossom extract
Orange (Citrus aurantium dulcis) peel extract
PEG-42 Eburico ceramides extract
Peppermint (Mentha piperita) extract
Philodendron (Phellodendron amurense) extract
Pine (Pinus sylvestris) needle extract
Polymethoxy bicyclic oxazolidine
Quaternium 73
Rubus thunbergii extract
Tea tree (Melaleuca alternifolia) oil
Triclocarban
Undecylenic acid

Anticaking

Aluminum starch octenylsuccinate
Calcium stearate
Distarch phosphate
Hydrated silica



The Only Form of Gentle Efficacy



Natural • Odorless • Biodegradable • Custom colors • Mild or aggressive particles

CORPORATE OFFICES • 1151 N. Fiesta Blvd. • Gilbert, AZ 85233 • (602) 545-7000 • Fax (602) 892-3000 • New York • Canada • Europe • Asia

FLORATECH
The Natural Solution

BROOKS INDUSTRIES inc.

Cosmetic Ingredients & Ideas®

70 Tyler Place, South Plainfield, NJ 07080 USA
Tel 908-561-5200 Fax 908-561-9174

Multifruit®
Alpha Hydroxy Acids



**UNIVERSAL
PRESERV-A-CHEM INC.**

297 North 7th Street, Brooklyn, New York 11211
Phone: 718-782-7429
Fax: 718-782-8109

*We Deliver
Quality*

"ALPHA HYDROXY ACIDS"

Glycolic Malic
Lactic Citric
Tartaric Ascorbic
Allantoin Aloe Vera

Functions

Kaolin
Magnesium myristate, M. silicate
Polyethylene, micronized
Silica silylate
Sodium aluminum silicate
Zinc stearate

Anticaries agent

Cetylamine hydrofluoride
Olaflur
Sodium fluoride
Stearyl trihydroxyethyl propylenediamine dihydrofluoride

Anticellulite

Aminophylline
Bladderwrack (*Fucus vesiculosus*) extract
Butcherbroom (*Ruscus aculeatus*) extract
Carcinia cambogia extract
Fomes fomentarius extract
Fomistopsis pinicola extract
Ivy extract
Mushroom (*Coriolus versicolor*) extract
TEA-hydroiodide
Tricholoma matsutake extract

Antidandruff

Burdock (*Arctium lappa*) extract
Chloroxyleneol
Corydalis ambigua extract
Disodium undecylenamide MEA-sulfosuccinate
Ginger root extract
Inga edulis extract
Mauritiella armata extract
Myristalkonium saccharinate
PEG-6 undecylenate
Piroctone olamine
Resorcinol
Rosemary (*Rosmarinus officinalis*) extract
Sodium shale oil sulfonate
Stenocalyx micalii extract
Undecylenamide DEA
Willow (*Salix alba*) bark extract
Zinc pyrithione

Antifungal

Black walnut (*Juglans nigra*) extract
Coneflower (*Echinacea angustifolia*) extract
Orange blossom extract
Pfaffia paniculata extract

Anti-inflammatory

Allantoin polygalacturonic acid
Bisabolol
Black poplar (*Populus nigra*) extract
Brassica rapa-depressa extract
Butcherbroom (*Ruscus aculeatus*) extract
Calendula officinalis extract
Catalpa kaempferia extract
Celastrus paniculata extract
Ceramide 33 (liquid soy extract)
Chaparral (*Larrea mexicana*) extract
Coneflower (*Echinacea angustifolia*) extract
Cornflower (*Centaurea cyanus*) extract
Dipotassium glycyrrhizinate
Eupatorium fortunei extract
Euphrasia officinalis extract
Ficus racemosa extract
Golden seal (*Hydrastis canadensis*) root extract
Guaiaculene
Horse chestnut (*Aesculus hippocastanum*) extract
Jujube (*Zizyphus jujuba*) extract
Laminaria japonica extract
Licorice (*Glycyrrhiza glabra*) extract
Ligusticum jeholense, L. lucidum extract
Mamcaria (*Chamomilla recutita*) extract
Melaleuca uncinata extract
Melia azadirachta extract

Mulberry (*Morus nigra*) extract
Niacinamide ascorbate
Orange (*Citrus aurantium dulcis*) peel extract
Orange blossom extract
Palmetto extract
Palmitoyl collagen amino acids
Passion flower (*Passiflora laurifolia*) fruit extract
Paulownia imperialis extract
Salicylic acid
Shea butter (*Butyrospermum parkii*)
Sodium carboxymethyl beta-glucan
Soy (*Glycine soja*) protein
Stearyl glycyrrhetinate
Stenocalyx micalii extract
Tocopheryl acetate, T. nicotinate
Trichomonas japonica extract
Willow (*Salix alba*) extract
Witch hazel (*Hamamelis virginiana*) extract
Withania somniferum extract
Yarrow (*Achillea millefolium*) extract
Zinc lactate

Anti-irritant

Acetyl monoethanolamine
Allantoin
Allantoin acetyl methionine, A. glycyrrhetic acid
Azelaamide MEA
Betaine
Calendula officinalis extract
Cocamidopropyl betaine
Coceth-7 carboxylic acid
Cornflower (*Centaurea cyanus*) extract
Diisostearyl dimer dilinoleate
Dipalmitoyl cystine
Green tea extract
Hydrolyzed sweet almond protein
Hydroxypropyltrimonium gelatin
Lauroyl collagen amino acids
L-Lysine lauroyl methionine
Mallow extract
Matricaria (*Chamomilla recutita*) extract
Palmitoyl hydrolyzed milk protein
Palmitoyl hydrolyzed wheat protein
Palmitoyl keratin amino acids
PEG-12 palm kernel glycerides
PEG-28 glyceryl tallowate
PEG-30 glyceryl monocoate
PEG-60 almond glycerides
PEG-78 glyceryl cocoate
PEG-82 glyceryl tallowate
PEG-200 glyceryl tallowate
Propionyl collagen amino acids
PVP
Saccharomyces lysate extract
Sodium C12-15 pareth-15 sulfonate
Sodium lauroamphoacetate
Soy (*Glycine soja*) protein
Undecylenoyl collagen amino acids
Valerian (*Valeriana officinalis*) extract

Antimicrobial

Benzalkonium chloride
Benzoic acid
Benzyl alcohol
Bromochlorophene
2-Bromo-2-nitropropane-1,3-diol
Butylparaben
Capryloyl collagen amino acids
Capryloyl glycine, C. keratin amino acids
Captan
Cetethyltrimonium bromide
Cetyl pyridinium chloride
Chlorothymol
Chloroxyleneol
Citron oil
Copper PCA
Dichlorobenzyl alcohol
Dilauryldimonium chloride

Domiphen bromide
Ethylparaben
Eucalyptus (*Eucalyptus globulus*) extract
Fenel (*Foeniculum vulgare*) extract
Garlic (*Allium sativum*) extract
Glyceryl caprylate, G. laurate
Hexamidine diisethionate
Hinokitiol
Honeysuckle (*Lonicera caprifolium*) extract
Lichen (*Usnea barbata*) extract
Myristalkonium chloride
Pentylene glycol
Phenethyl alcohol
Phenol
Phenoxyethanol
Phenoxyisopropanol
Phenyl mercuric acetate, P.m. benzoate, P.m. borate
o-Phenylphenol
Polymethoxy bicyclic oxazolidine
Potassium sorbate
Propylparaben
Ricinoleamodopropyltrimonium ethosulfate
Sage (*Salvia officinalis*) extract
Sodium benzoate, S. pyrithione
Sodium ricinoleate, S. shale oil sulfonate
Thimerosal
Thyme (*Thymus vulgaris*) extract
Thymol
Triclocarban
Triclosan
Undecylenamidopropyltrimonium methosulfate
Undecylenic acid
Zinc oxide, Z. PCA
Zinc pyrithione, Z. undecylenate

Antioxidant

Ascorbic acid
A. polypeptide
Ascorbyl oleate, A. palmitate
Beta-carotene
BHA
BHT
t-Butyl hydroquinone
Dilauryl thioldipropionate
Dimyristyl thioldipropionate
Disodium EDTA
Distearyl thioldipropionate
Dodecyl gallate
EDTA
Erythorbic acid
Ferulic acid
Grape (*Vitis vinifera*) seed extract
Green tea extract
HEDTA
Hydroquinone
Hydroquinone-beta-D-glucopyranoside
p-Hydroxyanisole
Lactoferrin
Lysine PCA
Melanin
Methyl gallate
Niacinamide ascorbate
Nordihydroguaiaretic acid
Oat (*Avena sativa*) extract
Oryzanol
Pentasodium pentetate
Pentetic acid
Propyl gallate
Retinyl palmitate polypeptide
Rosemary (*Rosmarinus officinalis*) extract
Saccharomyces lysate extract
Sage (*Salvia officinalis*) extract
Sodium ascorbate, S. erythorbate
Sodium metabisulfite
Sodium selenate, S. sulfite
Superoxide dismutase
Tea (*Camellia sinensis*) extract
Tetrasodium EDTA
Tocopherol

Functions

Tocopheryl acetate, T. linoleate
Wild marjoram (*Origanum vulgare*) extract
Yeast (*Saccharomyces cerevisiae*) extract (Faex)

Antiperspirant

Allantoin-aluminum chlorhydrate
Aluminum capryloyl hydrolyzed collagen
Aluminum chlorohydrate-gly, A. chloride
Aluminum chlorohydrate, A. chlorohydrate
Aluminum PCA, A. sesquichlorohydrate
Aluminum undecylenoyl collagen amino acids
Aluminum zirconium pentachlorohydrate
Aluminum zirconium tetrachlorohydrate
Aluminum zirconium tetrachlorohydrate GLY
Aluminum zirconium trichlorohydrate
Aluminum-zirconium-glycine powder
Sage (*Salvia officinalis*) extract
Tormentil (*Potentilla erecta*) extract
Zirconium chlorohydrate

Antiseptic

Aluminum PCA
Azadirachta indica extract
2-Bromo-2-nitropropane-1,3-diol
Calendula amurensis extract
p-Chloro-m-cresol
Clove (*Eugenia caryophyllus*) oil
Crataegus cuneata extract
Dichlorobenzyl alcohol
Entada phaseoloides extract
Eucalyptus (*Eucalyptus globulus*) extract
Golden seal (*Hydrastis canadensis*) root extract
Hexachlorophene
Melia australasica, M. azadirachta extract
Methyl salicylate
Orange (*Citrus aurantium dulcis*) peel extract
Oxyquinoline sulfate
Pfaffia paniculata extract
Potassium abietoyl hydrolyzed collagen
PVP-iodine
Silver nitrate
Sodium salicylate
Sterculia plataniifolia extract
Tea tree (*Melaleuca alternifolia*) oil
Tormentil (*Potentilla erecta*) extract
Xanthoxylum bungeanum extract

Antistat

Acetamide MEA
Acetamidopropyl trimonium chloride
6-(N-Acetyl amino)-4-oxhexyltrimonium chloride
Alkyl dimethyl betaine
Babassuamidopropalkonium chloride
Behenamidopropyl ethyldimonium ethosulfate
Behenamidopropyl hydroxyethyl dimonium chloride
Carboxymethyl chitin
Cetethyl morpholinium ethosulfate
Cetrimonium chloride
Chitin
Chitosan
Cocamidopropyl ethyldimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed rice protein
Cocodimonium hydroxypropyl hydrolyzed soy protein
Dimethicone hydroxypropyl trimonium chloride
Dimethyl behenamine, D. cocamine
Dimethyl palmitamine, D. soyamine
Dimethyl tallowamine
Diolethylamidoethyl hydroxyethylmonium methosulfate
Dipalmitoyl ethyl hydroxyethylmonium methosulfate
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
Erucamidopropyl hydroxysultaine
Glyceryl monoperfluoroglutarate
Hydrogenated tallowamine oxide
Isostearamidopropyl dimethylamine.

Lactamidopropyl trimonium chloride
Lauryldimonium hydroxypropyl hydrolyzed collagen
Linoleamidopropyl dimethylamine dimer dilinoleate
Olealkonium chloride
PEG-2 cocamine
PEG-2 cocomonium chloride
PEG-2 oleammonium chloride
PEG-8 caprylic/capric glycerides
PEG-10 cocamine
PEG-15 soyamine
PPG-9 diethylmonium chloride
PPG-25 diethylmonium chloride
PPG-40 diethylmonium chloride
Propylene glycol stearate
Quaternium-26, -27, -53, -62, -72
Rapeseedamidopropyl benzyldimonium chloride
Rapeseedamidopropyl epoxypropyl dimonium chloride
Silica, colloidal
Sorbitan caprylate
N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
Soyethyl morpholinium ethosulfate
Soyethyl dimonium ethosulfate
Stearalkonium chloride
Stearamidopropyl benzyl dimonium chloride
Stearamidopropyl ethyldimonium ethosulfate
Steartrimonium chloride
N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
Wheat germamidopropyl ethyldimonium ethosulfate

Astringent

Aluminum citrate, A. lactate
Astragalus sinicus extract
Astrocaryum murumuru, A. nucuma extract
Azadirachta indica extract
Azelaamide MEA
Bearberry (*Arctostaphylos uva-ursi*) extract
Birch (*Betula alba*) leaf extract
Catalpa baeli extract
Celastrol extract
Coccinea indica extract
Coffee (*Coffea arabica*) bean extract
Euphrasia officinalis extract
Euterpe precatoria extract
Evening primrose (*Oenothera biennis*) extract
Gentian (*Gentiana lutea*) extract
Geranium maculatum extract
Grape (*Vitis vinifera*) leaf extract
Henna (*Lawsonia inermis*) extract
Hierochloa odorata extract
Honeysuckle (*Lonicera caprifolium*) extract
Hops (*Humulus lupulus*) extract
Horsetail extract
Hypericum perforatum extract
Ivy extract
Juniperus communis extract
Kadsura heteroloba extract
Kola (*Cola acuminata*) extract
Lady's mantle (*Alchemilla vulgaris*) extract
Lemon (*Citrus medica limonum*) extract, peel extract
Lemon bioflavonoids extract
Lysimachia foenum-graecum extract
Magnolia spp. extract
Maunira flexuosa extract
Maximilliana regia extract
Melaleuca uncinata, M. wilsonii extract
Melia australasica extract
Nettle (*Urtica dioica*) extract
Oak (*Quercus*) bark extract
Ocimum basilicum, O. sanctum extract
Palmetto extract
Passion flower (*Passiflora laurifolia*) fruit extract
Plantain (*Plantago major*) extract
Polygonum multiflorum extract
Pterocarpus marsupianus extract
Raspberry (*Rubus*) extract

Sambucus nigra oil
Sanguisorba root extract
Selenium spp. extract
Shorea robusta extract
Tannic acid
Walnut (*Juglans regia*) leaf extract, oil
Wheat (*Triticum vulgare*) protein
White nettle (*Lamium album*) extract
Witch hazel (*Hamamelis virginiana*) extract
Xanthoxylum bungeanum extract
Zinc lactate
Ziziphus jujuba extract

Binder

Aluminum starch octenylsuccinate
Boron nitride
C20-40, C30-50, C40-60 alcohols
Calcium stearate
Cellulose gum
Dihydroabietyl behenate
Diisostearyl malate
Diocetyl sebacate
Distarch phosphate
Ethylcellulose
Gellan gum
Hydrogenated jojoba oil
Isocetyl alcohol, I. palmitate
Isopropyl isostearate
Isostearyl erucate, I. isostearate
Isostearyl neopentanoate
Maltodextrin
Methylcellulose
Microcrystalline cellulose
Oeryl palmitate
Octyldodecyl myristate
bis-Octyldodecyl stearoyl dimer dilinoleate
Octyldodecyl stearoyl stearate
Oleyl oleate
PEG-20, -75, -150, -240, -350
Polydipentene
Polyethylene: P., micronized
PTFE
PVP
Sorbitol
Synthetic wax
Tapioca dextrin
Tridecyl behenate, T. neopentanoate
Tridecyl stearoyl stearate
Trisodium HEDTA

Biol. polymer

Distarch phosphate
Dog rose (*Rosa canina*) seed extract
Hydrogen peroxide
Kojic acid
Mulberry (*Morus nigra*) extract
Sanguisorba root extract

Botanical

Acacia
Acacia farnesiana extract
Agrimony (*Agrimonia eupatoria*) extract
Alder (*Alnus firma*) extract
Alfalfa (*Medicago sativa*) extract
Algae (*Ascophyllum nodosum*) extract
Algae (*Lithothamnium calcarum*) extract
Aloe barbadensis, A.B. extract
Aloe capensis extract
Alpine Veronica extract
Althea officinalis extract
Angelica archangelica extract
Anise (*Pimpinella anisum*) extract
Apple (*Pyrus malus*) extract
Apricot (*Prunus armeniaca*) extract
Arnica montana extract
Artemisia capillaris extract
Artichoke (*Cynara scolymus*) extract
Asafetida (*Ferula assa foetida*) extract
Asiatum sieboldi extract

Functions

Asparagus officinalis extract	Cucumber (Cucumis sativus) extract	Jasmine (Jasminum officinale) extract
Astragalus sinicus extract	Cypress (Cupressus sempervirens) extract	Job's tears (Coix lacryma-jobi) extract
Avens (Geum rivale) extract	Dandelion (Taraxacum officinale) extract	Jojoba (Buxus chinensis) seed powder
Avocado (Persea gratissima) extract	Date (Phoenix dactylifera) extract	Juniperus communis extract
Balm mint (Melissa officinalis) extract, oil extract	Dead Sea Mud, Salts	Kelp (Macrocystis pyrifera) extract
Banana (Musa sapientum) extract	Dog rose (Rosa canina) hips extract	Kiwi (Actinidia chinensis) fruit extract, seed oil
Barley (Hordeum vulgare) extract	Dyer's broom extract	Kola (Cola acuminata) extract
Basil (Ocimum basilicum) extract	Eleuthero ginseng (Acanthopanax senticosus) extract	Kramena andra extract
Bearberry (Arctostaphylos uva-ursi) extract	Elm (Ulmus campestris) extract	Lady's mantle (Alchemilla vulgaris) extract
Bee pollen extract	Eucalyptus (Eucalyptus globulus) extract	Lady's Thistle (Silybum marianum) extract
Beet (Beta vulgaris) extract	Eucalyptus globulus oil	Laurel (Laurus nobilis) extract
Betaglican	Eucommia ulmoides extract	Lavender (Lavandula angustifolia) extract, water
Bilberry (Vaccinium myrtillus) extract	Euphrasia officinalis extract	Lemon (Citrus medica limonum) extract, juice
Bioflavonoids	Evening primrose (Oenothera biennis) extract, oil	extract, peel extract
Birch (Betula alba) bark extract, leaf extract	Everlasting (Helichrysum arenarium) extract	Lemon bioflavonoids extract
Birch (Betula platyphylla japonica) extract	Fennel (Foeniculum vulgare) extract	Lemongrass (Cymbopogon schoenanthus) extract
Bitter orange (Citrus aurantium amara) extract, flower extract, peel extract	Fenugreek extract	Leopard flower (Belamcanda chinensis) root extract
Black cohosh (Cimicifuga racemosa) extract	Fermented rice (Oryza sativa) extract	Lettuce (Lactuca scariola sativa) extract
Black currant (Ribes nigrum) extract	Fern (Dryopteris filix-Mas) extract	Licorice (Glycyrrhiza glabra) extract
Black henna extract	Fig (Ficus carica) extract	Lilac (Syringa vulgaris) extract
Black poplar (Populus nigra) extract	Fir needle extract	Linden (Tilia argentea) extract
Black walnut (Juglans nigra) extract	Fumitory (Fumaria officinalis) extract	Linden (Tilia cordata) extract, water
Bladderwrack (Fucus vesiculosus) extract	Gardenia florida extract	Loquat (Eriobotrya japonica) leaf extract
Borage (Borago officinalis) extract	Garlic (Allium sativum) extract	Maidenhair fern extract
Buckthorn (Frangula alnus) extract	Gelidium cartilagineum	Magnolia kobus extract
Burdock (Arctium lappa) extract	Gentian (Gentiana lutea) extract	Mallow extract
Burdock (Arctium minus) root extract	Geranium maculatum extract	Mandragora officinarum extract
Burnet extract	Ginger root extract	Mannan
Butcherbroom (Ruscus aculeatus) extract	Ginkgo biloba extract	Marigold
Cabbage rose (Rosa centifolia) extract	Ginseng (Panax ginseng) extract	Marine silts
Calamus (Acorus calamus) extract	Glycyrrhetic acid	Matricaria (Chamomilla recutita) extract
Calendula officinalis extract	Glycyrrhizic acid	Meadowsweet (Spiraea ulmaria) extract
Caper (Capparis spinosa) extract	Glycyrrhizin, ammoniated	Melon (Cucumis melo) extract
Capsicum frutescens extract, C.f. oleoresin	Golden seal (Hydrastis canadensis) root extract	MEA iodine
Caraway (Carum carvi) extract	Goldthread (Coptis japonica) extract	Mistletoe (Viscum album) extract
Cartagenean (Chondrus crispus)	Gotu kola extract	Mugwort (Artemisia princeps) extract, water
Carrot (Daucus carota) extract	Grape (Vitis vinifera) distillate, extract	Mulberry (Morus alba) root extract
Carrot (Daucus carota sativa) oil	Grape (Vitis vinifera) leaf, seed extract	Mulberry (Morus bombycis) root extract
Cassia aunculata extract	Grape skin extract	Mushroom extract
Celandine (Chelidonium majus) extract	Grapefruit (Citrus grandis) peel extract	Myrrh (Commiphora myrrha) extract
Chamomile (Anthemis nobilis) extract, oil	Green bean (Phaseolus lunatus) extract	Nasturtium extract
Chaparral (Larrea mexicana) extract	Ground Ivy (Glechoma hederacea) extract	Neroli extract
Cherry (Prunus speciosa) leaf extract	Guarana (Paullinia cupana) extract	Nettle (Urtica dioica) extract
Cherry bark, C.b. extract	Harpagophytum procumbens extract	Oak (Quercus) bark extract
Chestnut (Castanea sativa) extract	Hayflower extract	Oak root extract
Chinese hibiscus (Hibiscus rosa-sinensis) extract	Hazel (Corylus avellana) nut extract	Oat (Avena sativa) bran, bran extract, flour, protein
Chlorella vulgaris extract	Henna (Lawsonia inermis) extract	Oat flower
Cimicifuga foetida rhizome extract	Hesperidin, H. methyl chalcone	Olive (Olea europae) extract, leaf extract
Cinchona succirubra extract	Hibiscus sabdariffa extract	Onion (Allium cepa) extract
Citroflavonoid, water soluble	Hibiscus synacus extract	Orange blossom extract
Citrus bioflavonoid complex	High beta-glucan barley flour	Orange (Citrus aurantium dulcis) flower extract, peel extract
Clary extract	Honeysuckle (Lonicera caprifolium) extract	Pansy (Viola tricolor) extract
Clove (Eugenia caryophyllus) extract	Honeysuckle (Lonicera japonica) leaf extract	Papaya (Carica papaya) extract
Clover (Trifolium pratense) extract	Hops (Humulus lupulus) extract	Parsley (Carum petroselinum) extract
Cnidium officinale rhizome extract, C.o. water	Horse chestnut (Aesculus hippocastanum) extract	Passion flower (Passiflora laurifolia) fruit extract
Coffee (Coffea arabica) bean extract	Horseradish (Cochlearia armoracia) extract	Passionflower (Passiflora incarnata) extract
Colloidal oatmeal	Horsetail extract	Pea (Pisum sativum) extract
Coltsfoot (Tussilago farfara) leaf extract	Houttuynia cordata extract	Peach (Prunus persica) extract, leaf extract
Comfrey (Symphytum officinale) leaf extract	Hyacinth (Hyacinthus orientalis) extract	Pelargonium capitatum extract
Condurango extract	Hydrocotyl (Centella asiatica) extract	Pellitory (Parietaria officinalis) extract
Coneflower (Echinacea angustifolia) extract	Hydrolyzed oat protein, soy flour	Pennyroyal (Mentha pulegium) extract
Corallina officinalis	Hypericum perforatum extract	Peony (Paeonia alba) extract
Corchorus olitorius extract	Hyssop (Hyssopus officinalis) extract	Peony (Paeonia obovata) root extract
Coriander (Coriandrum sativum) extract	Indian cress (Tropaeolum majus) extract	Peppermint (Mentha piperita) extract, oil
Corn (Zea mays) cob powder, silk extract	Isodonis Japonicus extract	Penilla ocyroides extract
Corn poppy (Papaver rhoeas) extract	Ivy extract	Periwinkle (Vinca minor) extract
Comflower (Centauria cyanus) extract	Japanese angelica (Angelica acutiloba) extract, water	PEG-80 jojoba acid/alcohol
Couch (Agropyron repens) grass	Japanese hawthorn (Crataegus cuneata) extract	PEG-120 jojoba acid/alcohol
Crataegus monogyna extract		
Crithmum maritimum extract		

CAMPO Siddha Herbs Extracts

Jothi-Pul (Glow-grass) Siddha Extract for High content bio-available
Natural Radium for anti Kaposi Sarcoma Skin Treatment.
Roma-Maram (Hairy Tree) Siddha Extract for ANTI-SENSE DNA
Topical applications for HIV+ Lymph-nodes
Siddha Extracts for post-Chemotherapy Skin-Damage Treatment



CAMPO RESEARCH



Level 36, Hong Leong Building,
16 Raffles Quay, Singapore 0104
Tel: (65) - 7653292 Full Colour Fax: (65) - 7653293
PC - Video Teleconferencing (65) 7653292 - For Tech. Assistance.

Functions

Pfaffia paniculata extract
Phellodendron amurense extract
 Phospholipids
 Pimento (*Pimenta officinalis*) extract
 Pine (*Pinus sylvestris*) cone, needle extract
 Pineapple (*Ananas sativus*) extract
 Plantain (*Plantago major*) extract
 Pollen extract
 Pongamol
 Poria Cocos extract
Pueraria lobata extract
 Queen of the meadow extract
 Quillaja saponaria extract
 Quince (*Pyrus cydonia*) seed extract
 Quinoa (*Chenopodium quinoa*) extract
 Raspberry (*Rubus*) extract
Rauwolfia (*Serpentina*) extract
 Red clover
Rehmannia chinensis extract
 Restharrow (*Ononis spinosa*) extract
Rhododendron chrysanthum extract
Rhodophycea extract
 Rhubarb (*Rheum palmatum*) extract
 Rice (*Oryza sativa*) bran extract
 Rice fatty acid
 Rose (*Rosa multiflora*) extract
 Rosemary (*Rosmarinus officinalis*) extract
Rubia tinctorum extract
 Safflower (*Carthamus tinctorius*) extract
 Sage (*Salvia officinalis*) extract, water
Sambucus nigra berry extract, extract
 Sandalwood (*Santalum album*) extract
Sanguinaria canadensis extract
Saponaria officinalis extract
Sasa veitchii extract
Saxifraga sarmentosa extract
Scabiosa arvensis extract
Scutellaria baicalensis root extract
 Silk extract
 Silver fir (*Abies pecunata*) extract
 Sisal (*Agave rigida*) extract
 Slippery elm extract
 Soapberry (*Sapindus mukurossi*) extract
Sophora angustifolia extract
Sophora flavescens root extract
Sophora japonica extract
 Soybean (*Glycine soja*) extract
 Soy (*Glycine soja*) germ extract, protein, sterol
 Spearmint (*Mentha viridis*) extract, oil
 Spinach (*Spinacia oleracea*) extract
Spiraea ulmaria extract
 Sunflower (*Helianthus annuus*) seed extract
 Sweet almond (*Prunus amygdalus dulcis*) extract
 Sweet cherry (*Prunus avium*) extract
 Sweet cicely (*Anthriscus cerefolium*) extract
 Sweet clover (*Melilotus officinalis*) extract
 Sweet violet (*Viola odorata*) extract
Swertia chirata extract
 Tea (*Camellia sinensis*) extract
 Thistle (*Chicus benedictus*) extract
 Thyme (*Thymus vulgaris*) extract
 Tomato (*Solanum lycopersicum*) extract
 Tormentil (*Potentilla erecta*) extract
 Tuberose (*Polygonum tuberosa*) extract
 Turmeric (*Curcuma longa*) extract
 Valerian (*Valeriana officinalis*) extract
 Walnut (*Juglans regia*) extract, leaf extract
 Water Lily (*Nymphaea alba*) root extract
 Watercress (*Nasturtium officinale*) extract

Wheat (*Triticum vulgare*) extract, protein
 Wheat (*Triticum vulgare*) germ extract
 Wheat bran lipids
 White ginger (*Hedychium coronarium*) extract
 White nettle (*Lamium album*) extract
 Wild agnemony (*Potentilla anserina*) extract
 Wild cherry (*Prunus serotina*) bark extract
 Wild indigo (*Baptista tinctoria*)
 Wild marjoram (*Origanum vulgare*) extract
 Willow (*Salix alba*) bark extract, extract
 Willow (*Salix alba*) leaf extract
 Witch hazel (*Hamamelis virginiana*) extract
 Yarrow (*Achillea millefolium*) extract
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)
Yucca vera extract
Zanthoxylum piperitum extract
 Zedoary (*Curcuma zedoaria*) oil

Buffer

Ammonium carbonate, A. phosphate
 Calcium hydroxide, C. phosphate
 Citric acid
 Ethanolamine HCl
 Glycine
 Phosphoric acid
 Potassium phosphate
 Potassium sodium tartrate
 Sodium acetate, S. citrate
 Sodium lactate, S. phosphate
 Succinic acid
 Tromethamine

Carrier

Acrylates copolymer, spherical powder
 Arginine
 Caprylic/capric triglyceride
 Caprylic/capric/lauric triglyceride
 Caprylic/capric/linoleic triglyceride
 Caprylic/capric/oleic triglycerides
 Ceteareth-20
 Coconut (*Cocos nucifera*) oil
 Cyclodextrin
 Dipropylene glycol
 Glyceryl caprylate, G. caprylate/caprates
 Hydrated silica
 Liposomes
 Magnesium silicate
 Methyl propanediol
 PEG-8/SMDI copolymer
 Potassium chloride
 PPG-12/SMDI Copolymer
 PPG-51/SMDI Copolymer
 Propylene carbonate, P. glycol
 Serum albumin
 Sodium carboxymethyl beta-glucan
 Sodium chloride
 Sodium magnesium silicate
 Tapioca dextrin

Chelators

beta-Alanine diacetic acid
 Calcium disodium EDTA
 Disodium EDTA, -copper
 EDTA
 HEDTA
 Malic acid
 Monostearyl citrate
 Pentasodium pentetate
 Penicilic acid

Phytic acid
 Potassium aspartate
 Sodium aspartate
 Sodium dihydroxyethylglycinate
 Sodium hexametaphosphate
 Tetrahydroxypropyl ethylenediamine
 Tetrasodium EDTA
 Tripotassium EDTA
 Trisodium EDTA, HEDTA

Cell stimulant

Aesculus chinensis extract
Artemisia apiacea extract
Astrocaryum muru, A. tucuma extract
Bactris gasipaes extract
Borboja sorbilla extract
Calendula amurensis extract
Chrysanthemum morifolium extract
Coccinea indica extract
 Comfrey (*Symphytum officinale*) leaf extract
 Condurango extract
 Dandelion (*Taraxacum officinale*) extract
Echitea glauca extract
Equisetum arvense extract
Eucalyptus (*Eucalyptus globulus*) extract
Euphorium fortunei extract
Euterpe precatoria extract
Ficus racemosa extract
 Glycoproteins
Hierochloe odorata extract
 Horse chestnut (*Aesculia hippocastanum*) extract
Inga edulis extract
Kadsura hetililoca extract
Ligustrum lucidum extract
Lysimachia foenum-graecum extract
Mauritia flexosa extract
Maximiliana regia extract
Melaleuca bracteata, M. symphyocarp extract
Nelumbium speciosum extract
Ocimum basilicum extract, O. santum extract
Paulownia imperialis extract
Pfaffia spp. extract
Pterocarpus marsupianus extract
Rubus thunbergii extract
Selinum spp. extract
Shorea robusta extract
Xanthoxylum bungeanum extract

Cleansing

Birch (*Betula alba*) leaf extract
 Lemongrass (*Cymbopogon schoenanthus*) extract
 Oat (*Avena sativa*) bran extract
 Passion flower (*Passiflora laurifolia*) fruit extract
 Witch hazel (*Hamamelis virginiana*) extract
 Yarrow (*Achillea millefolium*) extract

Conditioner

Acetamide MEA
 6-(N-Acetylamino)-4-oxyhexyltrimonium chloride
 Acrylamidopropyltrimonium chloride/acrylamide copolymer
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer
 AMP-isostearyl hydrolyzed wheat protein
 Apricot (*Prunus armeniaca*) kernel oil
 Behenalkonium chloride
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Behenamidopropyl ethyldimonium ethosulfate
 Behenamidopropyl PG-dimonium chloride

CAMPO Siddha Herb Extracts
CAMPO Rainforest Herb Extracts & Oils
CAMPO Australasian Herbs & Tea Tree Extracts
CAMPO Chinese & Japanese Herb Extracts



CAMPO RESEARCH



Level 36, Hong Leong Building,
 16 Raffles Quay, Singapore 0104
 Tel: (65) - 7653292 Full Colour Fax: (65) - 7653293
 PC - Video Teleconferencing (65) 7653292 - For Tech. Assistance.

Functions

Behenamidopropyl dimethylamine behenate	Hydrolyzed sweet almond protein	Polymethacrylamidopropyltrimonium chloride
Behenamine oxide	Hydrolyzed wheat protein/PVP copolymer	Polyoxyethylene dihydroxypropyl linoleaminium chloride
Behenoyl PG-trimonium chloride	Hydrolyzed wheat protein polysiloxane polymer	Polyquaternium-2, -5, -6, -11, -16
Behenyl betaine	Hydroxyceryl hydroxyethyl dimonium chloride	Polyquaternium-17, -18, -24, -29, -44
Benzyltrimonium hydrolyzed collagen	Hydroxyproline	Potassium dimethicone copolyol panthenyl phosphate
Canolamidopropyl betaine	Hydroxypropyl chitosan	Potassium lauroyl collagen amino acids
Capramide DEA	Hydroxypropyl guar hydroxypropyltrimonium chloride	Potassium lauroyl hydrolyzed soy protein
Caprylic/capric/lauric triglyceride	Hydroxypropyl-bis-isostearamidopropyl dimonium chloride	Potassium lauroyl wheat amino acids
Caprylyl pyrrolidone	Hydroxypropyl bis-stearyldimonium chloride	Potassium stearoyl hydrolyzed collagen
Cassia auriculata extract	Hydroxypropyltrimonium gelatin	PPG-5 lanolin alcohol ether
Cetamine oxide	Hydroxypropyltrimonium hydrolyzed keratin	PPG-9 diethylmonium chloride
Cetearalkonium chloride	H.h. silk	PPG-20 lanolin alcohol ether
Chitosan PCA	Hydroxypropyltrimonium hydrolyzed wheat protein	Proline
Citric acid	Isopropyl hydroxybutyramide dimethicone copolyol	Propylene glycol stearate
Cocamidopropyl dimethylamine, C.d. lactate, C.d. propionate	Isopropyl lanolate	PVP/dimethiconylacrylate/polycarbamy/polyglycol ester
Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen	Isostearamidopropyl betaine, I. dimethylamine	PVP/dimethylaminoethylmethacrylate copolymer
Cocamidopropyl dimonium hydroxypropyl hydrolyzed collagen	Isostearamidopropyl dimethylamine gluconate	PVP/dimethylaminoethylmethacrylate/polycarbamy/polyglycol ester
Cocamidopropyl ethyldimonium ethosulfate	Isostearamidopropyl dimethylamine glycolate	PVP/hydrolyzed wheat protein copolymer
Cocamidopropyl PG-dimonium chloride, C.P.c. phosphate	Isostearamidopropyl dimethylamine lactate	Quaternium-22, -26, -33, -61, -62, -70, -80
Coco-morpholine oxide	Isostearamidopropyl ethyldimonium ethosulfate	Quaternium-76 hydrolyzed collagen
Coco/oleamidopropyl betaine	Isostearamidopropyl laurylaceto dimonium chloride	Rapeseedamidopropyl benzyl dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed hair keratin	Isostearamidopropyl morpholine, I.m. lactate	Rapeseedamidopropyl epoxypoly dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed rice protein	Isostearamidopropyl morpholine oxide	Rapeseedamidopropyl ethyldimonium ethosulfate
Cocodimonium hydroxypropyl hydrolyzed silk	Isostearamidopropyl PG-dimonium chloride	Rice peptide
Cocodimonium hydroxypropyl hydrolyzed soy protein	Isostearaminopropyl dimonium chloride	Ricinoleamidopropyl-dimonium ethosulfate
Coconut alcohol	Isostearyl hydrolyzed animal protein	Ricinoleamidopropyl betaine
N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate	Isostearylamidopropyl dihydroxypropyl dimonium chloride	Ricinoleamidopropyl dimethylamine lactate
Collagen phthalate	Lactoglobulin	Ricinoleamidopropyl ethyldimonium ethosulfate
Dibehenyl/diarachidyl dimonium chloride	Lauramidopropyl dimethylamine	Ricinoleamidopropyltrimonium chloride
Dibehenyldimonium chloride	Lauramidopropyl PG-dimonium chloride, I.P.c. phosphate	Ricinoleamodopropyltrimonium ethosulfate
Dicetyldimonium chloride	Lauramine oxide	Silicone quaternium-3, -4
Didecyldimonium chloride	Lauroampho PG-glycinate phosphate	Silk amino acids
Dihydroxyethyl cocamine oxide	Lauroyl hydrolyzed collagen, L.h. elastin	Sodium/TEA-lauroyl collagen amino acids
Dihydroxyethyl dihydroxypropyl stearamonium chloride	Lauroyl silk amino acids	Sodium/TEA-lauroyl hydrolyzed keratin
Dihydroxyethyl tallow glycinate	Lauryl methyl gluceth-10 hydroxypropyl-dimonium chloride	Sodium/TEA-lauroyl keratin amino acids
Dihydroxyethyl tallowamine oxide	Lauryl phosphate, L. pyrrolidone	Sodium citrate
Dilauryl acetyl dimonium chloride	Laurylidimonium hydroxypropyl hydrolyzed collagen, keratin, soy protein	Sodium cocoyl hydrolyzed soy protein
Dilinoamidopropyl dimethylamine	Linoleamidopropyl dimethylamine	Sodium hydrogenated tallow dimethyl glycinate
Dimethyl hydrogenated tallowamine	Milk amino acids	Sodium lauroyl collagen, keratin amino acids
Dimethyl lauramine, D.I. isostearate	Milk protein (Lactis proteinum)	Sodium lauroyl wheat amino acids
Dimethyl myristamine, soyamine, stearamine	Myristalkonium chloride	Sodium stearoamphoacetate
Dimethylamidopropylamine dimerate	Myristamidopropyl betaine, M. dimethylamine	Soluble keratin, wheat protein
Disodium hydrogenated cottonseed glyceride sulfosuccinate	Myrrimonium bromide	Soyamide DEA
Disodium laureth sulfosuccinate	Oat (Avena sativa) protein	Soyamidopropyl benzylidimonium chloride
Disodium lauroamphodiacetate	Oleamide	Soyamidopropyl betaine, S. dimethylamine
Distearyldimonium chloride	Oleamidopropyl betaine, O. dimethylamine	Soyamidopropyl ethyldimonium ethosulfate
Ethyl ester of hydrolyzed keratin	Oleamidopropyl dimethylamine hydrolyzed collagen	Soyethyl morpholinium ethosulfate
N-Ethylether-bis-1,4-(N-isostearylamidopropyl)-N,N-dimethyl ammonium chlo	Oleamidopropylamine oxide	Soyethylidimonium ethosulfate
Glutamic acid	Oleamine	Stearamide MEA
Glyceryl collagenate	Oleamine oxide	Stearamidoethyl diethylamine, ethanolamine
Glycine	Oleoyl sarcosine	Stearamidopropyl benzyl dimonium chloride
Guar hydroxypropyltrimonium chloride	Oleyl betaine	Stearamidopropyl cetearyl dimonium tosylate
Henna (Lawsonia inermis) extract	Oleyl dimethylamidopropyl ethonium ethosulfate	Stearamidopropyl dimethylamine stearate
Hydrogenated tallowamine oxide	Palmitamidopropyl betaine	Stearamidopropyl ethyldimonium ethosulfate
Hydrogenated tallowtrimonium chloride	Palmitamidopropyl dimethylamine	Stearamidopropyl morpholine lactate
Hydrolyzed concichorin protein	Palmitamine, P. oxide	Stearamidopropyl PG-dimonium chloride phosphate
Hydrolyzed egg protein	Pantbenyl hydroxypropyl steardimonium chloride	Stearamine oxide
Hydrolyzed extensin	PEG-2 milk solids	Steardimonium hydroxypropyl hydrolyzed collagen, keratin
Hydrolyzed fibronectin	PEG-2 oleammonium chloride	Steardimonium panthenol
Hydrolyzed fish protein	PEG-3 lauramine oxide	Stearyl amidoethyl diethylamine
Hydrolyzed keratin	PEG-5 stearyl ammonium lactate	Stearamonium bromide
Hydrolyzed lactalbumin	PEG-15 cocomonium chloride	Stearyl dimethicone
Hydrolyzed milk protein	PEG-15 cocopolyamine	Tallowamidopropyl dimethylamine
Hydrolyzed oats	PEG-15 tallowmonium chloride	Tetramethyl trihydroxy hexadecane
Hydrolyzed reticulin	PEG-27	TEA-cocoyl hydrolyzed collagen
Hydrolyzed soy protein	PEG-40	Trachea hydrolysate
	PEG-85 lanolin	Tricetylmonium chloride
	PEG-7000	Tridecyl salicylate
	Polydimethicone copolyol	Triethonium hydrolyzed collagen ethosulfate
		Wheat germamidopropyl dimethylamine lactate
		Wheat germamidopropyl dimethylamine lactate

Functions

Wheat germamidopropyl ethyldimonium
ethosulfate
Wheat peptide
Yeast powder, deproteinated

Coupling agent

Acetyl monoethanolamine
Butyloctanol
Myreth-3
Oleyl alcohol
PPG-10 butanediol
PPG-10 cetyl ether
PPG-10 oleyl ether
PPG-15 stearyl ether
PPG-22 butyl ether
PPG-23 oleyl ether
PPG-50 oleyl ether
Trideceth-7 carboxylic acid

Denaturant

Brucine sulfate
Denatonium benzoate, saccharide
Nicotine sulfate
Sucrose octaacetate
Thymol

Dental powder

Dicalcium phosphate
Silica
Sodium monofluorophosphate
Stannous fluoride

Deodorant

Abietic acid
Azadirachta indica extract
Chlorophyllin-copper complex
Eugenia jambolana extract
Farnesol
Fermented vegetable
Mauritia flexosa extract
Salvia miltiorrhiza extract
Sodium aluminum chlorohydroxy lactate
Spondias amara extract
Triethyl citrate
Zinc phenol sulfonate, Z. ricinoleate

Depilatory

Barium sulfide
Beeswax, oxidized
Calcium thioglycolate
L-cysteine HCL
Potassium thioglycolate
Sodium thioglycolate
Thioglycerin

Detergent

Ammonium laureth sulfate
Ammonium lauryl sulfate
Capramide DEA
Cocamidopropyl dimethylamine lactate
Decyl glucoside
Decyltetradeceth-25
DEA lauryl sulfate
Diamyl sodium sulfosuccinate
Dicyclohexyl sodium sulfosuccinate
Diisobutyl sodium sulfosuccinate
Disodium caproamphodipropionate
Disodium caproamphodipropionate
Disodium capryloamphodipropionate
Disodium capryloamphodipropionate
Disodium cetaryl sulfosuccinate
Disodium cocamido MEA-sulfosuccinate
Disodium cocamido MIPA-sulfosuccinate
Disodium cocoamphodipropionate
Disodium deceth-6 sulfosuccinate
Disodium isodecyl sulfosuccinate
Disodium lauramido MEA-sulfosuccinate
Disodium lauramido PEG-2 sulfosuccinate
Disodium laureth sulfosuccinate

Disodium lauroamphodipropionate
Disodium lauroamphodipropionate
Disodium lauryl sulfosuccinate
Disodium myristamido MEA-sulfosuccinate
Disodium nonoxynol-10 sulfosuccinate
Disodium olexmido PEG-2 sulfosuccinate
Disodium PEG-4 cocoamido MIPA-sulfosuccinate
Disodium ricinoleamido MEA-sulfosuccinate
Disodium tallowiminodipropionate
Dodecylbenzene sulfonic acid
Dodecyl-6, -9
Isopropylamine dodecylbenzenesulfonate
Isostearamidopropyl betaine
Isosteareth-6 carboxylic acid
Isostearoamphopropionate
Isostearyl hydroxyethyl imidazoline
Lauramidopropylamine oxide
Laureth-11
Laurampho PG-glycinate phosphate
Lauryl glucoside, L. phosphate
Magnesium laureth sulfate, M. lauryl sulfate
Magnesium PEG-3 cocamide sulfate
MEA-dodecylbenzenesulfonate
MEA-laureth sulfate
MEA-lauryl sulfate
MIPA-lauryl sulfate
Myristamine oxide
Myristic acid
Nonoxynol-10
Oleoamphohydroxypropylsulfonate
Oleth-12, -15
Oleyl betaine
Palmitamidopropyl betaine
PEG-10 glyceryl stearate
PEG-15 glyceryl stearate
PEG-25 glyceryl isostearate
Potassium cocoyl hydrolyzed collagen
Sodium caproamphoacetate
Sodium cocoamphoacetate
Sodium cocoamphopropionate
Sodium cocomonoglyceride sulfate
Sodium cocoyl hydrolyzed soy protein
Sodium cocoyl isethionate
Sodium C12-15 pareth-25 sulfate
Sodium C14-16 olefin sulfonate
Sodium C14-17 alkyl seculfonate
Sodium deceth sulfate
Sodium decyl diphenyl ether sulfonate
Sodium dodecylbenzenesulfonate
Sodium dodecyl diphenyl ether sulfonate
Sodium iodate
Sodium laureth-2 sulfate
Sodium laureth-3 sulfate
Sodium laureth-7 sulfate
Sodium laureth-12 sulfate
Sodium laureth-13-carboxylate
Sodium laureth sulfate
Sodium lauriminodipropionate
Sodium lauroamphopropionate
Sodium lauroyl methyl alaninate
Sodium lauryl phosphate, S.I. sulfate
Sodium lauryl sulfoacetate
Sodium methyl oleoyl taurate
Sodium methyl cocoyl taurate
Sodium methyl lauroyl taurate
Sodium methyl naphthalenesulfonate
Sodium myreth sulfate
Sodium myristyl sulfate
Sodium oeryl sulfate, oleyl sulfate
Sodium POE alkyl ether acetate
Sodium trideceth-7 carboxylate
Sodium trideceth sulfate
Sodium tridecyl sulfate
Steareth-11, -30
TEA-dodecylbenzenesulfonate
TEA-laureth sulfate
TEA-lauryl sulfate
TEA-palm kernel sarcosinate

TEA-PEG-3 cocamide sulfate
Undecylenamidopropyl betaine

Disinfectant

Benzalkonium chloride
Chlorophene
Didecylmonium chloride
Myristalkonium saccharinate
Shikonia
Sodium capryloamphoacetate
Tea tree (*Melaleuca alternifolia*) oil
p-Tertiaryphenol

Dispersant

Alkylated polyvinylpyrrolidone
C20-40, C30-50, C40-60 alcohols
Castor (*Ricinus communis*) oil
Ceteareth-20
Cetyl PPG-2 isodeceth-7 carboxylate
Cholesteryl/behenyl/ocryldodecyl lauroyl glutamate
Decaglycerol monodiolate
Diisocetyl dodecanedioate
Diisostearyl adipate
Dimethicone copolyol methyl ether
Diocryldodecyl dimer dilinolate
Diocryldodecyl dodecanedioate
Ethyl hydroxymethyl oleyl oxazoline
Glyceryl caprylate, G. caprylate/caprinate
Glyceryl diisostearate
Hydrogenated castor oil, H. lecithin
Hydrogenated tallow glycerides
Isobutylene/MA copolymer
Isocetyl alcohol
Isopropyl C12-15-pareth-9-carboxylate
Isostearyl neopentanoate
Lanolin acid
Laureth-4, -6, -16
Melanin
Nonoxynol-2, -18, -20, -30, -40
Octoxynol-5, -10
Octoxynol 16, 30, 40, 70
Ocryldodeceth-5
Ocryldodecyl/dimethicone copolyol citrate
Oleth-40
Oleyl alcohol
PEG-5 castor oil, glyceryl sesquiolate
PEG-6 beeswax
PEG-8/SMDI copolymer
PEG-9 castor oil, oleate, stearate
PEG-10 dioleate, stearamine
PEG-12 beeswax
PEG-12 glyceryl dioleate, laurate
PEG-15 castor oil
PEG-20 almond glycerides
PEG-20 glyceryl isostearate
PEG-20 sorbitan triisostearate
PEG-25 castor oil
PEG-30 dipolyhydroxystearate
PEG-40 hydrogenated castor oil PCA isostearate
PEG-60 shea butter glycerides
Poloxamer 101, 122, 181, 182, 184
Polyglyceryl-2 sesquiosostearate
Polyglyceryl-3 diisostearate, oleate
Polyglyceryl-5 distearate
Polyglyceryl-6 mixed fatty acids
Polyglyceryl-10 diisostearate, distearate
Polyglyceryl-10 decaoleate
Polyhydroxystearic acid
Polysorbate 40, 80
Potassium polyacrylate
PPG-3 PEG-6 oleyl ether
PPG-9 diethylmonium phosphate
PPG-12/SMDI Copolymer
PPG-15 stearyl ether
PPG-25, PPG-40 diethylmonium chloride
PPG-51/SMDI Copolymer
PVP/icosene copolymer
PVP/hexadecene copolymer

Functions

Rapeseed oil, ethoxylated high erucic acid
 Ricinoleyl alcohol
 Sodium ceteth-13-carboxylate
 Sodium lignosulfonate, S. polymethacrylate
 Sodium polynaphthalenesulfonate
 Sorbitan oleate
 Steareth-10
 Tricortanvyl PVP
 Triisostearin PEG-6 esters
 Trioctyldodecyl citrate

Emollient

Acetylated glycol stearate
 Acetylated hydrogenated lanolin
 Acetylated hydrogenated lard glyceride
 Acetylated hydrogenated vegetable glyceride
 Acetylated lanolin, A.I. alcohol
 Acetylated lard glyceride
 Acetylated monoglycerides
 Acetylated palm kernel glycerides
 Aleurites moluccana ethyl ester
 Allantoin
 Aluminum/magnesium hydroxide stearate
 AMP-isocteamyl hydrolyzed soy protein
 Apricot (Prunus armeniaca) kernel oil
 Arachidyl behenate
 Argania spinosa oil
 Avocado (Persea gratissima) oil, unsaponifiables
 Avocado oil ethyl ester
 Babassu (Orbignya oleifera) oil
 Baryl isostearate, B. stearate
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Behenoxy dimethicone
 Behenyl alcohol, B. behenate
 Behenyl erucate, B. isostearate
 Benzyl laurate
 Bladderwrack (Fucus vesiculosus) extract
 Borage (Borago officinalis) seed oil
 Borageamidopropyl phosphatidyl PG-dimonium chloride
 Brain extract
 Brazil nut (Bertholletia excelsa) oil
 Butyl myristate, oleate, stearate
 Butyloctanol
 Butyloctyl oleate
 C12-13, C12-16, C14-15 alcohols
 C12-15 alcohols octanoate
 C12-15 alkyl benzoate
 di-C12-15 alkyl fumarate
 C12-15 alkyl lactate
 Camellia kissi oil
 Tea (Camellia sinensis) oil
 C10-30 cholesterol/lanosterol esters
 Canola oil
 Caprylic/capric triglyceride
 Caprylic/capric triglyceride PEG-4 esters
 Caprylic/capric/lauric triglyceride
 Caprylic/capric/linoleic triglyceride
 Caprylic/capric/oleic triglycerides
 Caprylic/capric/stearic triglyceride
 Caprylic/capric/succinic triglyceride
 Capsicum frutescens oleoresin
 Carrot (Daucus carota sativa) oil
 Cashew (Anacardium occidentale) nut oil
 Castor (Ricinus communis) oil
 Cetearyl behenate, C. candelillate
 Cetearyl isononanoate, C. octanoate
 Cetearyl palmitate, C. stearate
 Ceteth-10
 Cetostearyl stearate
 Cetyl C12-15 parath-9 carboxylate
 Cetyl acetate, C. alcohol
 Cetyl esters, C. lactate
 Cetyl myristate, C. octanoate
 Cetyl oleate, C. palmitate
 Cetyl PPG-2 isodeceth-7 carboxylate
 Cetyl ricinoleate, C. stearate

Cetyl stearyl octanoate
 Chia (Salvia hispanica) oil
 Cholestene esters
 Cholesterol
 Cholesteryl/beheryl/octyldodecyl lauroyl glutamate
 Cholesteryl hydroxystearate
 Cholesteryl stearate
 Choleth-24
 C 18-70 Isoparaffin
 C10-18, C12-18 triglycerides
 C12-15 linear alcohols 2-ethylhexanoate
 Cucumuloopropyl PG-dimonium chloride
 Cocoa (Theobroma cacao) butter
 Coco-caprylate/caprate
 Coco-rapeseedate
 Coconut (Cocos nucifera) oil
 Cocoyl hydrolyzed soy protein
 Collagen phthalate
 Colloidal oatmeal
 Comfrey (Symphytum officinale) leaf extract
 Corn (Zea mays) oil
 Corn poppy (Papaver rhoeas) extract
 Cottonseed (Gossypium) oil
 Cuttlefish extract
 Cyclomethicone
 Deceth-4 phosphate
 Decyl oleate
 Decyltetradecanol
 Dialkyldimethylpolysiloxane
 Dibutyl sebacate
 Dicapryl adipate
 Dicaprylyl ether, D. maleate
 Diethylene glycol diisononanoate
 Diethylene glycol dioctanoate
 bis-Diglyceryl/caprylate/caprate/isostearate/
 hydroxystearate/adipate
 bis-Diglyceryl/caprylate/caprate/isostearth/
 stearate/hydroxystearate/adipate

Dihydroabietyl behenate
 Dihydroxyethyl tallowamine oleate
 Diisobutyl adipate
 Diisocetyl adipate, dodecanedioate
 Diisodecyl adipate
 Diisopropyl adipate, dimer dilinoleate
 Diisopropyl sebacate
 Diisostearyl trimethylolpropane siloxy silicate
 Diisostearyl adipate
 Diisostearyl dimer dilinoleate
 Diisostearyl fumarate, D. malate
 Dilinoleic acid
 Dimethicone
 Dimethicone copolyol
 Dimethicone copolyol acetate, D.c. almondate
 Dimethicone copolyol isostearate, D.c. lactate
 Dimethicone copolyol methyl ether
 Dimethicone copolyol phthalate
 Dimethicone propylethylenediamine behenate
 Dimethiconol stearate
 Dimethyl lauramine oleate
 Dioctyl adipate
 Dioctyl dimer dilinoleate
 Dioctylcyclohexane
 Dioctyldodecyl dimer dilinoleate
 Dioctyldodecyl dodecanedioate
 Dioctyl malate, D. sebacate, succinate
 Dipentaerythritol fatty acid ester
 Dipentaerythrityl hexacaprylate/hexacaprinate
 Dipentaerythrityl hexahydroxystearate/isostearate
 Distearyl dimethylamine dilinoleate
 Diuridecyl adipate
 Dog rose (Rosa canina) hips oil
 Egg (Ovum) yolk extract
 Emu (Dromiceus) oil
 Erucyl erucate
 Ethyl avocadoate
 Ethylhexyl isopalmitate

COSMETIC AND PHARMACEUTICAL INGREDIENTS

CAMPHOR USP

CARBOXYMETHYLCELLULOSE USP

CETINA (CETYL ESTERS & STEARAMIDE DEA)

SPERMWAX® (CETYL ESTERS WAX)

CHOLESTEROL NF

DENATONIUM BENZOATE NF

GLYCINE USP

IPG (ISOPENTYLDIOL)

MENTHOL USP

ROBANE (SQUALANE NF)

SUPRAENE® (SQUALENE)

UREA PEROXIDE USP

ROBECO INC.

99 PARK AVENUE • NEW YORK, NY 10016

212-986-6410

FAX: 212-986-6419

OUR 78TH YEAR

Functions

2-Ethylhexyl isostearate	Isononyl isononanoate	Ocnyldodecanol
Ethyl linolenate, E. minkate	Isopentylidol	Ocnyldodecyl behenate, O. benzoate
Ethyl monthuate, E. myristate	Isopropyl avocadate	Ocnyldodecyl erucate, O. myristate
Ethyl oleate, E. olive	Isopropyl C12-15-paren-9-carboxylate	Ocnyldodecyl oleate, O. ricinoleate
Evening primrose (<i>Oenothera biennis</i>) extract, oil	Isopropyl isostearate	Ocnyldodecyl stearate
Glycereth-4.5-lactate	Isopropyl lanolate, I. linoleate	bis-Ocnyldodecyl stearoyl dimer dilinoleate
Glycereth-5 lactate	Isopropyl myristate, I. palmitate	Ocnyldodecyl stearoyl stearate
Glycereth-7 benzoate	Isopropyl PPG-2-isodeceth-7 carboxylate	Oleamine oxide
Glycereth-7 diisononanoate	Isopropyl stearate	Oleic/palmitoleic/linoleic glycerides
Glycereth-7 triacetate	Isosorbide laurate	Oleic alcohol
Glycereth-7 trioctanoate	Isostearic acid	Oleostearine
Glycereth-12, -26	Isostearyl alcohol	Oleyl alcohol, O. erucate, O. oleate
Glycerol triacrylate/caprate	Isostearyl behenate, I. benzoate	Olive (<i>Olea europae</i>) oil
Glyceryl adipate, G. dioleate	Isostearyl diglyceryl succinate	Orange (<i>Citrus aurantium dulcis</i>) peel wax
Glyceryl isostearate, G. lanolate	Isostearyl erucate, I. erucyl erucate	Orange roughy (<i>Hoplostethus atlanticus</i>) oil
Glyceryl linoleate, G. monoproglutamate	Isostearyl isostearate, I. lactate	Palm (<i>Elaeis guineensis</i>) oil
Glyceryl myristate, G. oleate	Isostearyl malate, I. myristate	Palm kernel glycerides
Glyceryl ricinoleate	Isostearyl neopentanoate, palmitate	Palmitic acid
Glyceryl triacetyl hydroxystearate	Isostearyl stearoyl stearate	Panthenyl triacetate
Glyceryl triacetyl ricinoleate	Isostearylamidopropyl dihydroxypropyl dimonium chloride	Partially hydrogenated canola oil
Glycosaminoglycans	Isotridecyl isononanoate	Partially hydrogenated soybean oil
Glycosphingolipids	Isotridecyl myristate	Peach (<i>Prunus persica</i>) extract
Gold of Pleasure oil	Jajoba (<i>Buxus chinensis</i>) oil	Peanut (<i>Arachis hypogaea</i>) oil
Grape (<i>Vitis vinifera</i>) seed oil	Jajoba butter, J. esters	Pecan (<i>Carya illinoensis</i>) oil
Hazel (<i>Corylus avellana</i>) nut oil	Jajoba oil, synthetic	PEG-2 diisononanoate, P. dioctanoate
Helianthus annuum ethyl ester	Kukui (<i>Aleurites moluccana</i>) nut oil	PEG-2 milk solids
Hexadecyl isopalmitate	Lactamide DGA	PEG-4
Hexamethyldisiloxane	Laneth-10 acetate	PEG-4 diheptanoate, P. dilaurate
Hexyl laurate	Lanolin, L. acid	PEG-5 C3-12 alcohols citrate
Hexyldecanol	Lanolin alcohol, L. oil	PEG-5 C14-18 alcohols citrate
Hexyldecyl stearate	Lanolin, ultra anhydrous	PEG-5 hydrogenated castor oil
Honey extract	Lanolin wax	PEG-5 hydrogenated castor oil trisostearate
Hybrid safflower (<i>Carthamus tinctorius</i>) oil	Lanosterol	PEG-6
Hybrid sunflower (<i>Helianthus annuus</i>) oil	Lard glyceride	PEG-6 capric/caprylic glycerides
Hydrogenated C6-14 olefin polymers	Laureth-2, -3	PEG-7 glyceryl cocoate
Hydrogenated castor oil	Laureth-2 acetate, L. benzoate	PEG-8
Hydrogenated castor oil laurate	Laureth-2 octanoate	PEG-8 dilaurate, P. dioleate
Hydrogenated coconut oil	Lauric/palmitic/oleic triglyceride	PEG-8/SMDI copolymer
Hydrogenated cottonseed oil	Lauryl behenate, L. lactate	PEG-9 stearyl stearate
Hydrogenated C12-18 triglycerides	Lauryl phosphate	PEG-10 stearyl stearate
Hydrogenated lanolin	Laurylidimethylamine isostearate	PEG-12
Hydrogenated lanolin, distilled	Lesquerella fendleri oil	PEG-12 dioleate, P. palm kernel glycerides
Hydrogenated lecithin	Linoleic acid	PEG-15 cocamine oleate/phosphate
Hydrogenated milk lipids	Macadamia ternifolia nut oil	PEG-18
Hydrogenated mink oil	Maleated soybean oil	PEG-20
Hydrogenated palm kernel glycerides	Mango (<i>Mangifera indica</i>) oil, seed oil	PEG-20 hydrogenated castor oil isostearate
Hydrogenated palm oil	Mango kernel oil	PEG-20 hydrogenated castor oil trisostearate
Hydrogenated polyisobutene	Meadowfoam (<i>Limnanthes alba</i>) seed oil	PEG-20 hydrogenated lanolin
Hydrogenated soybean oil	Menhaden (<i>Brevoortia tyrannus</i>) oil	PEG-24 hydrogenated lanolin
Hydrogenated starch hydrolysate	Methyl acetyl ricinoleate	PEG-25 PABA, P. propylene glycol stearate
Hydrogenated tallow glyceride	Methyl gluceth-20	PEG-40 glyceryl laurate
Hydrogenated tallow glyceride lactate	Methyl gluceth-20 benzoate, M. g. distearate	PEG-40 hydrogenated castor oil isostearate
Hydrogenated turtle oil	Methyl hydroxystearate, M. ricinoleate	PEG-40 hydrogenated castor oil laurate
Hydrogenated vegetable glycerides	Microcrystalline wax	PEG-40 hydrogenated castor oil trisostearate
Hydrogenated vegetable oil	Mineral oil (<i>Paraffinum liquidum</i>)	PEG-40 jojoba oil
Hydrolyzed collagen	Mink oil	PEG-50 hydrogenated castor oil laurate
Hydrolyzed concionin protein	Musk rose (<i>Rosa moschata</i>) oil	PEG-50 hydrogenated castor oil trisostearate
Hydrolyzed keratin	Myreth-3	PEG-60 shea butter glycerides
Hydrolyzed mushroom (<i>Tricholoma matsutake</i>) extract	Myreth-3 caprate, M. laurate	PEG-70 mango glycerides
Hydrolyzed oat protein	Myreth-3 myristate, M. octanoate	PEG-75
Hydroxylated lanolin	Myristyl alcohol, M. lactate	PEG-75 lanolin, P. shea butter glycerides
Hydroxylated milk glycerides	Myristyl myristate, M. octanoate	PEG-75 shea butter glycerides
Hydroxystearic acid	Myristyl propionate, M. stearate	PEG-150
Illipe butter	Nestsfoot oil	PEG/PPG-17/6 copolymer
Isobutyl palmitate, I. stearate	Neem (<i>Melia azadirachta</i>) seed oil	Pentaerythrityl dioleate
Isocetyl behenate, I. octanoate	Neopentyl glycol dicaprate	Pentaerythrityl isostearate/caprate/caprylate/adipate
Isocetyl palmitate, I. salicylate	Neopentyl glycol dicaprate/dicaprylate	Pentaerythrityl stearate
Isocetyl stearate	Neopentyl glycol diisooctanoate	Pentaerythrityl stearate/caprate/caprylate/adipate
Isodeceth-2 cocoate	Neopentyl glycol dioctanoate	Pentaerythrityl tetracaprylate/tetracaprate
Isodecyl citrate, I. cocoate	Oat (<i>Avena sativa</i>) bran extract, extract, flour	Pentaerythrityl tetraisononanoate, P. tetraisoostearate
Isodecyl isononanoate, I. laurate	Octacosanyl stearate	Pentaerythrityl tetralaurate, P. tetraoctanoate
Isodecyl neopentanoate	Ocnyl cocoate	Pentaerythrityl tetraoleate, P. tetrapelargonate
Isodecyl octanoate, I. oleate	Ocnyl hydroxystearate, O. isononanoate	Pentaerythrityl tetraostearate
Isodecyl stearate	Ocnyl neopentanoate, O. octanoate	Perfluorodecalin
Isododecane	Ocnyl oleate, O. palmitate	Perfluoropolydimethylisopropyl ether
Isocicosane	Ocnyl pelargonate, O. stearate	Petrolatum
Isohexadecane	Ocnyldodecanol	Phenethyl dimethicone
		Phenyl dimethicone, P. methicone, P. trimethicone

Functions

Phytantriol	PPG-8/SMDI copolymer	Propylene glycol myristyl ether acetate
Pistachio (<i>Pistacia vera</i>) nut oil	PPG-9	Propylene glycol stearate, SE
Placental enzymes	PPG-9-buteth-12	Pumpkin (<i>Cucurbita pepo</i>) seed oil
Pollen extract	PPG-9 butyl ether	Quinoa (<i>Chenopodium quinoa</i>) oil
Poloxamer 105 benzoate	PPG-10 butanediol, P. cetyl ether	Rapeseed (<i>Brassica campestris</i>) oil
Poloxamer 182 dibenzoate	PPG-10 methyl glucose ether	Rice (<i>Oryza sativa</i>) bran oil, bran wax
Polybutene	PPG-10 oleyl ether	Rice fatty acid
Polydecene	PPG-11 stearyl ether	Safflower (<i>Carthamus tinctorius</i>) oil
Polydimethicone copolyol	PPG-12-buteth-16	Salmon (<i>Salmo</i>) egg extract
Polyethylene glycol	PPG-12-PEG-50 lanolin	Sesame (<i>Sesamum indicum</i>) oil
Polyglyceryl-2 diisostearate, P. tetraistearate	PPG-12-PEG-65 lanolin oil	Shark liver oil
Polyglyceryl-2 triisostearate	PPG-12/SMDI Copolymer	Shea butter (<i>Butyrospermum parkii</i>)
Polyglyceryl-3 diisostearate, P. oleate	PPG-14 butyl ether	Shea butter (<i>Butyrospermum parkii</i>) extract
Polyglyceryl-3 stearate	PPG-15 butyl ether, P. stearyl ether	Shea butter, ethoxylated
Polyglyceryl-6 dioleate	PPG-15 stearyl ether benzoate	Shorea siroptera butter
Polyglyceryl-10 decaoleate, P. decastearate	PPG-16 butyl ether	Silybum marianum ethyl ester
Polyglyceryl-10 tetraoleate	PPG-18 butyl ether	Sitostearyl acetate
Polyisobutene	PPG-20	Skin lipids
Polyisobutene:isohexapentacontahexane	PPG-20-buteth-30	Slippery elm extract
Polyisobutene:isooctahexacontane	PPG-20 cetyl ether	Sodium C8-16 isoalkylsuccinyl lactoglobulin sulfonate
Polyisobutene:isopentacontaoctane	PPG-24-glycereth-24	Sodium carboxymethyl beta-glucan
Polyisoprene	PPG-26	Sodium ceteth-13-carboxylate
Polyoxyethylene polyoxypropylene glycol	PPG-27 glyceryl ether	Sodium dimethicone copolyol acetyl methylaurate
Polyquaternium-2	PPG-28-buteth-35	Sodium glyceryl oleate phosphate
Polysiloxane polyalkylene copolymer	PPG-30	Sodium hyaluronate, S. polymethacrylate
Polysorbate 40	PPG-30 cetyl ether	Sorbeth-20
Potassium dimethicone copolyol phosphate	PPG-40 butyl ether	Sorbitan isostearate, S. palmitate
PPG-2-buteth-3	PPG-50 cetyl ether, P. oleyl ether	Sorbitan sesquioleate, S. sesquisteate
PPG-2 lanolin alcohol ether	PPG-51/SMDI Copolymer	Sorbitan trioleate
PPG-2 myristyl ether propionate	PPG-53 butyl ether	Soybean (<i>Glycine soja</i>) oil
PPG-3 hydrogenated castor oil	Propylene glycol ceteth-3 acetate	Spermaceri
PPG-3 myristyl ether	Propylene glycol dicaprylate	Sphingolipids
PPG-5-buteth-7	Propylene glycol dicaprylate/dicaprate	Squalene
PPG-5-laureth-5	Propylene glycol diisostearate, P.g. dioctanoate	Stearamidopropyl cetearyl dimonium tosylate
PPG-5 butyl ether	Propylene glycol dipalargonate	Steareth-4 stearate
PPG-5 lanolin wax	Propylene glycol isoceteth-3 acetate	Stearic acid, S. hydrazide
PPG-5 pentaerythrityl ether	Propylene glycol isostearate, P.g. laurate	Stearoxy dimethicone
PPG-7-buteth-10	Propylene glycol myristate	

ANIMAL OR VEGETABLE?

New V-Series Cerasynt[®] emulsifiers give you the choice

ISP Van Dyk has added vegetable-based Cerasynt[®] derivatives to their outstanding emulsifier line. Cerasynt SD-V and IP-V provide the same excellent performance as the original animal-derived products. They are ideal for use as secondary emulsifiers, stabilizers and opacifiers in a wide variety of cosmetic creams and lotions. For information, call **201-450-7724**.



VAN DYK

a subsidiary of International Specialty Products

For samples, call the ISP Sample Center at 1-800-243-6788. To place an order, call ISP Customer & Sales Service at 1-800-622-4423.

Functions

Stearoxymethicone/dimethicone copolymer
 Stearyl behenate, S. benzoate
 Stearyl dimethicone, S. erucate
 Stearyl heptanoate, S. propionate
 Stearyl stearate
 Stearyl stearoyl stearate
 Sucrose cocoate
 Sunflower (Helianthus annuus) seed oil
 Sweet almond (Prunus amygdalus dulcis) oil
 Sweet cherry (Prunus avium) pit oil
 Synthetic jojoba oil
 Synthetic wax
 Tallow
 Tetradecylcyclosyl stearate
 Tocopheryl acetate
 Tricaprin
 Tricaprylin
 Tricaprylyl citrate
 Tricholoma matsutake extract
 Tridecyl behenate, T. cocoate
 Tridecyl erucate, T. neopentanoate
 Tridecyl octanoate, T. stearate
 Tridecyl stearoyl stearate
 Tridecyl trimellitate
 Trihexyldecyl citrate
 Triisocetyl citrate
 Triisostearin
 Triisostearyl citrate
 Triisostearyl trilinoleate
 Trilaurin
 Trilinolein
 Trimethylolpropane tricaprylate/tricaprate
 Trimethylolpropane tricoate
 Trimethylolpropane trioleate
 Trimyrstin
 Trioleanolin
 Trioctyldecyl citrate
 Triolein
 Tripalmitin
 Tripropylene glycol citrate
 Tristearin
 Triundecanolin
 Vegetable oil
 Walnut (Juglans regia) oil
 Wheat (Triticum vulgare) germ oil

Emulsifier

Acetylated hydrogenated lard glyceride
 Acetylated hydrogenated vegetable glyceride
 Acetylated monoglycerides
 Acrylates/C10-C30 alkyl acrylate crosspolymer
 Acrylates/vinyl isodecanoate crosspolymer
 Acrylic acid/acrylonitril copolymer
 2-Aminobutanol
 Ammonium acrylates/acrylonitril copolymer
 Arachidyl alcohol
 Beeswax
 Behenamidopropyl dihydroxypropyl dimonium chloride
 Beheneth-5 -10 -20 -30
 Behenic acid
 Behenyl betaine
 Borageamidopropyl phosphatidyl PG-dimonium chloride
 Butyloctanol
 C12-20 acid PEG-8 ester
 C18-36 acid
 Calcium dodecylbenzene sulfonate
 Calcium protein complex

Calcium stearate
 Calcium stearoyl lactylate
 Capramide DEA
 Caprylic/capric acid
 Caprylic/capric glycerides
 Castor oil, ethoxylated
 Cetalkonium chloride
 Cetareth-2 -4 -5 -6
 Cetareth-2 phosphate
 Cetareth-3 phosphate
 Cetareth-8 -10 -11 -12
 Cetareth-10 phosphate
 Cetareth-15 -17 -20 -25
 Cetareth-27 -29 -30 -34
 Cetearyl alcohol
 Cetearyl glucoside
 Ceteth-2 -4 -6 -10 -12 -13
 Ceteth-16 -20 -25 -30 -33
 Cetethyldimonium bromide
 Cetrimonium chloride
 Cetyl dimethicone copolyol
 Cetyl phosphate
 Cholesterol
 Choleth-10 -15 -24
 Cocamide DEA, C. MEA
 Cocamidopropyl dimethylamine
 Cocamidopropyl PG-dimonium chloride phosphate
 Cocamine
 Coceth-7 carboxylic acid
 Coconut acid
 Copper protein complex
 Cottonseed glyceride
 C12-13 pareth-3 -4 -9 -23
 C16-18 pareth-3 -5.5 -13 -19
 Cyclodextrin
 Decaglycerol monodiolate
 DEA-cetareth-2-phosphate
 DEA-cetyl phosphate
 DEA-cyclocarboxypropylolate
 DEA-oleth-3 phosphate
 DEA-oleth-5-phosphate
 DEA-oleth-10 phosphate
 DEA-oleth-20-phosphate
 Dicetareth-10 phosphoric acid
 Diethanolamine
 Diethylaminoethyl stearate
 Diglyceryl stearate malate
 Dihydrocholeth-15 -20 -30
 Dihydrogenated tallow phthalic acid amide
 Dilauryl acetyl dimonium chloride
 Dilinoleamidopropyl dimethylamine dimethicone copolyol phosphate
 Dilinoleic acid
 Dimethicone copolyol almondate
 Dimethicone copolyol isostearate
 Dimethicone copolyol laurate
 Dimethicone copolyol methyl ether
 Dimethicone copolyol olivate
 Dimethicone copolyol phthalate
 Dipalmitoylethyl hydroxyethylmonium methosulfate
 Dipropylene glycol
 Disodium hydrogenated cottonseed glyceride sulfosuccinate
 Disodium ricinoleamido MEA-sulfosuccinate
 Disodium stearyl sulfosuccinate
 Disodium sulfosuccinamide
 Distearyl phthalic acid amide

N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
 Dodecylphenol-ethylene oxide condensate
 Egg (Ovum) yolk extract
 Emulsifying wax NF
 Ethoxylated fatty alcohol
 N-Ethylether-bis-1,4-(N-isostearylamidopropyl-N,N-dimethyl ammonium chlo
 Ethyl hexanediol
 Euglena gracilis polysaccharide
 Glycereth-26 phosphate
 Glyceryl caprylate, G. caprylate/caprate
 Glyceryl citrate/lactate/linoleate/oleate
 Glyceryl cocoate, G. dilaurate
 Glyceryl dilaurate, G. dioleate
 Glyceryl distearate, G. hydroxystearate
 Glyceryl isostearate, G. lanolate
 Glyceryl laurate, G. linoleate
 Glyceryl mono-di-tri-caprylate
 Glyceryl myristate, G. oleate
 Glyceryl palmitate, G. ricinoleate
 Glyceryl ricinoleate SE
 Glyceryl stearate, G. stearate citrate
 Glyceryl stearate lactate
 Glyceryl stearate SE
 Glyceryl undecylenate
 Glycol distearate, G. oleate
 Glycol palmitate, G. stearate
 Glycol stearate SE
 Glycolamide stearate
 Glycosphingolipids
 Hydrogenated coco-glycerides
 Hydrogenated cottonseed glyceride
 Hydrogenated lanolin
 Hydrogenated lecithin
 Hydrogenated palm oil
 Hydrogenated soy glyceride
 Hydrogenated tallow glycerides
 Hydrogenated tallow glycerides citrate
 Hydroxycetyl phosphate
 Hydroxylated lanolin
 Hydroxylated lecithin
 Hydroxyoctacosanyl hydroxystearate
 Hydroxypropyl-bis-isostearylamidopropylidimonium chloride
 Isocetareth-8 stearate
 Isoceteth-10 stearate
 Isoceteth-20
 Isocetyl alcohol
 Isolaureth-6
 Isostearamidopropyl dimethylamine glucoate
 Isostearamidopropyl dimethylamine glycolate
 Isostearamidopropyl laurylacetylodimonium chloride
 Isosteareth-2 -3 -10 -12 -20 -22 -50
 Isosteareth-2-octanoate
 Isosteareth-10 stearate
 Isostearic acid
 Isostearyl diglyceryl succinate
 Isostearylamidopropyl dihydroxypropyl dimonium chloride
 Karaya (Sterculia urens) gum
 Laneth-5 -10 -15 -16 -20 -40
 Laneth-10 acetate
 Lanolin
 Lanolin alcohol
 Lanolin, ultra anhydrous
 Lanolin wax
 Lauramide DEA, L. MEA

3 BETTER IDEAS.

CARBOPOL

 New, easiest to
 disperse carbomer

CARBOPOL
INT 2020
POLYMER
 For surfactant-based
 products

PEMULEN
 POLYMERIC EMULSIFIERS
 Eliminates surfactant-based
 emulsifiers

1 BETTER SOURCE.

BF Goodrich
 Talk to the global leader.

Functions

Lauramidopropyl dimethylamine	PEG-5 lanolate, P. oleamine	PEG-20 lanolin, P. laurate
Lauramidopropyl PG-dimonium chloride	PEG-5 soy sterol, P. soyamine	PEG-20 oleate
Laureth-1 -2 -3 -4 -5	PEG-5 stearamine, P. stearate	PEG-20 methyl glucose sesquistearate
Laureth-2-octanoate	PEG-5 tallow amine	PEG-20 sorbitan beeswax
Laureth-3 phosphate	PEG-6 capric/caprylic glycerides	PEG-20 sorbitan isostearate
Laureth-4 carboxylic acid	PEG-6 cocamide	PEG-20 sorbitan triisostearate
Laureth-5 carboxylic acid	PEG-6 C12-14 ether	PEG-20 sorbitan trioleate
Laureth-6 -7 -9 -11 -12	PEG-6 dilaurate, P. dioleate	PEG-20 stearate, P. tallow amine
Laureth-11 carboxylic acid	PEG-6 distearate, P. isostearate	PEG-23 oleate, P. stearate
Laureth-16 -20 -23 -25 -30	PEG-6 lauramide, P. laurate	PEG-24 hydrogenated lanolin
Lauryl PCA	PEG-6 oleate, P. palmitate	PEG-25 castor oil
Laurylmethicone copolyol	PEG-6 sorbitan beeswax	PEG-25 phytosterol
Lecithin	PEG-6 sorbitan laurate	PEG-25 propylene glycol stearate
Linoeamidopropyl PG-dimonium chloride phosphate	PEG-6 sorbitan oleate	PEG-25 soy sterol, P. stearate
Lithium stearate	PEG-6 sorbitan stearate	PEG-29 castor oil
Magnesium sulfate hepta-hydrate	PEG-6 stearate	PEG-30 castor oil
Maleated soybean oil	PEG-6-32	PEG-30 dipolyhydroxystearate
Methoxy PEG-17/dodecyl glycol copolymer	PEG-6-32 stearate	PEG-30 glyceryl cocoate
Methyl gluceth-20 distearate	PEG-7 glyceryl cocoate	PEG-30 glyceryl isostearate
Methyl glucose dioleate, M. g. sesquistearate	PEG-7 hydrogenated castor oil	PEG-30 glyceryl laurate
Methyl glucose sesquistearate	PEG-7 oleate	PEG-30 glyceryl oleate
MEA-laureth sulfate	PEG-7.5 tallowamine	PEG-30 glyceryl stearate
Myreth-3 -4 -7	PEG-8	PEG-30 hydrogenated castor oil
Myreth-3 myristate	PEG-8 beeswax, P. castor oil	PEG-30 lanolin
Myristamidopropyl dimethylamine	PEG-8 C12-14 ether	PEG-30 sorbitan tetraoleate
Nonoxynol-1 -2 -4 -5 -6 -7	PEG-8 dilaurate, P. dioleate	PEG-32 dilaurate, P. dioleate
Nonoxynol-8 -9 -10 -11 -12 -13	PEG-8 distearate	PEG-32 distearate, P. laurate
Nonoxynol-14 -15 -18 -20 -30 -40 -50	PEG-8 glyceryl laurate	PEG-32 oleate, P. stearate
Nonyl nonoxynol-5 -10	PEG-8 laurate, P. oleate	PEG-33 castor oil
Oat (Avena sativa) flour	PEG-8, P. tallate	PEG-35 castor oil, P. stearate
Octoxynol-1 -3 -5 -8 -10	PEG-9 castor oil	PEG-40 castor oil
Octoxynol 16, 30, 40	PEG-9 diisostearate	PEG-40 glyceryl isostearate
2-Octyl dodecyl alcohol	PEG-9 dioleate, P. distearate	PEG-40 glyceryl laurate
Ocetyldecanol	PEG-9 laurate, P. oleate	PEG-40 glyceryl triisostearate
Ocetyldodeceth-20 -25	PEG-9 stearate	PEG-40 hydrogenated castor oil
Oleamide DEA	PEG-10 castor oil, P. cocamine	PEG-40 hydrogenated castor oil PCA isostearate
Oleamidopropyl dimethylamine	PEG-10 coconut oil esters	PEG-40 sorbitan diisostearate
Oleamine oxide	PEG-10 C12-18 alcohols	PEG-40 sorbitan lanolate
Oleic acid	PEG-10 dioleate	PEG-40 sorbitan tetraoleate
Oleth-2 -3 -4 -5 -6 -7 -8 -9	PEG-10 glyceryl isostearate	PEG-40 stearate
Oleth-10 -12 -15 -20 -23	PEG-10 hydrogenated castor oil	PEG-40/dodecyl glycol copolymer
Oleth-25 -30 -40 -50	PEG-10 hydrogenated castor oil triisostearate	PEG-42 babassu glycerides
Oleth 13	PEG-10 lanolate	PEG-44 sorbitan laurate
Oleth-2 phosphate	PEG-10 polyglyceryl-2 laurate	PEG-45 palm kernel glycerides
Oleth-3 phosphate	PEG-10 sorbitan laurate	PEG-45 safflower glycerides
Oleth-5 phosphate	PEG-10 soy sterol, P. stearamine	PEG-50 lanolin, P. stearamine
Oleth-10 phosphate	PEG-10 stearate	PEG-50 stearate
Oleth-20 phosphate	PEG-11 babassu glycerides	PEG-60 almond glycerides
Palm acid	PEG-11 castor oil	PEG-60 castor oil
Palmitamidopropyl dimethylamine	PEG-12 dilaurate, P. dioleate	PEG-60 corn glycerides
Palmitic acid	PEG-12 distearate	PEG-60 glyceryl triisostearate
PEG-2 cocamine, P. distearate	PEG-12 glyceryl dioleate	PEG-60 hydrogenated castor oil
PEG-2 hydrogenated tallow amine	PEG-12 laurate, P. oleate	PEG-60 hydrogenated castor oil isostearate
PEG-2 laurate, P. laurate SE	PEG-12 stearate, P. tallate	PEG-60 hydrogenated castor oil triisostearate
PEG-2 oleamine, P. oleate	PEG-14 avocado glycerides	PEG-60 shea butter glycerides
PEG-2 soyamine, P. stearamine	PEG-15 castor oil	PEG-60 sorbitan tetraoleate
PEG-2 stearate, P. stearate SE	PEG-15 cocamine	PEG-70 mango glycerides
PEG-3 cocamide	PEG-15 glyceryl isostearate	PEG-75
PEG-3 C12-C18 alcohols	PEG-15 glyceryl laurate	PEG-75 castor oil, P. dilaurate
PEG-3 glyceryl isostearate	PEG-15 glyceryl ricinoleate	PEG-75 dioleate, P. distearate
PEG-3 glyceryl triisostearate	PEG-15 oleamine, P. oleate	PEG-75 lanolin, P. laurate
PEG-3 glyceryl tristearate	PEG-15, P. stearamine	PEG-75 oleate
PEG-3 lanolate, P. sorbitan oleate	PEG-15 tallow amine	PEG-75 shea butter glycerides
PEG-3 stearate	PEG-15 tallow polyamine	PEG-75 sborea butter glycerides
PEG-4 dioleate, P. diisostearate	PEG-16	PEG-75 stearate
PEG-4 dilaurate, P. distearate	PEG-16 hydrogenated castor oil	PEG-80 sorbitan laurate
PEG-4 glyceryl distearate	PEG-16 soy sterol	PEG-90 stearate
PEG-4 laurate, P. oleate	PEG-18 stearate	PEG-100 castor oil
PEG-4 stearate	PEG-20 almond glycerides	PEG-100 hydrogenated castor oil
PEG-4 stearyl stearate	PEG-20 castor oil, P. dilaurate	PEG-100 lanolin, P. stearate
PEG-4 tallate	PEG-20 dioleate, P. distearate	PEG-120 distearate
PEG-5 castor oil, P. cocamine	PEG-20 glyceryl laurate	PEG-150 dilaurate, P. dioleate
PEG-5 C12-C18 alcohols	PEG-20 glyceryl oleate	PEG-150 distearate, P. lanolin
PEG-5 glyceryl isostearate	PEG-20 glyceryl stearate	PEG-150 laurate, P. oleate
PEG-5 glyceryl sesquioleate	PEG-20 glyceryl triisostearate	PEG-150 stearate
PEG-5 glyceryl stearate	PEG-20 glyceryl tristearate	PEG-200 castor oil
PEG-5 glyceryl triisostearate	PEG-20 hydrogenated castor oil	PEG-200 glyceryl stearate
	PEG-20 hydrogenated lanolin	PEG-200 hydrogenated castor oil

Functions

PEG-200 laurate, P. oleate
 PEG-400 laurate
 Phosphate esters
 Phosphated amine oxides
 Phospholipids
 Poloxamer 101, 105, 122, 123, 124
 Poloxamer 181, 182, 184, 185, 235, 237
 Poloxamer 238, 334, 338, 407
 Polyglyceryl-2 oleate
 Polyglyceryl-2 polyhydroxystearate
 Polyglyceryl-2 sesquisteate
 Polyglyceryl-2 stearate
 Polyglyceryl-2-PEG-4-distearate
 Polyglyceryl-2-PEG-4 stearate
 Polyglyceryl-3 diisostearate, P. dioleate
 Polyglyceryl-3 distearate
 Polyglyceryl-3 methylglucose distearate
 Polyglyceryl-3 oleate, P. polyricinoleate
 Polyglyceryl-3 stearate
 Polyglyceryl-4 oleate, P. stearate
 Polyglyceryl-6 dioleate, P. distearate
 Polyglyceryl-6 laurate, P. myristate
 Polyglyceryl-6 oleate, P. polyricinoleate
 Polyglyceryl-6 stearate
 Polyglyceryl-8 oleate
 Polyglyceryl-10 decaoleate
 Polyglyceryl-10 diisostearate
 Polyglyceryl-10 dioleate, P. dipalmitate
 Polyglyceryl-10 distearate, P. isostearate
 Polyglyceryl-10 laurate, P. linoleate
 Polyglyceryl-10 mixed fatty acids
 Polyglyceryl-10 myristate
 Polyglyceryl-10 oleate
 Polyglyceryl-10 pentastearate
 Polyglyceryl-10 stearate
 Polyglyceryl-10 tetraoleate
 Polyglyceryl-10 trioleate
 Polyoxyethylene polyoxypropylene glycol
 Polyquaternium-5, -11
 Polysorbate 20, 21, 40, 60, 61
 Polysorbate 65, 80, 81, 85
 Potassium alginate, P. cetyl phosphate
 Potassium laurate, P. myristate
 Potassium tallowate
 PPG-1-PEG-9 lauryl glycol ether
 PPG-2-ceteareth-9
 PPG-3 isosteareth-9
 PPG-3 PEG-6 oleyl ether
 PPG-5-buteth-7
 PPG-5-ceteth-20
 PPG-5-ceteth-10 phosphate
 PPG-8 oleate
 PPG-10 cetyl ether phosphate
 PPG-12-PEG-50 lanolin
 PPG-15 stearyl ether
 PPG-24-buteth-27
 PPG-25 laureth-25
 PPG-26-buteth-26
 PPG-26 oleate
 PPG-36 oleate
 Propylene glycol alginate, P.g. dioleate
 Propylene glycol hydroxystearate
 Propylene glycol laurate, P.g. ricinoleate
 Propylene glycol ricinoleate SE
 Propylene glycol stearate
 Propylene glycol stearate, SE
 Quaternium-33
 Rapeseedamidopropyl ethyldimonium ethosulfate
 Rice (Oryza sativa) bran wax
 Ricinoleamide DEA
 Ricinoleic acid
 Saponins
 Selenium protein complex
 Silicone quaternium-5, -6
 Sodium acrylates/vinyl isodecanoate crosspolymer
 Sodium capryl lactylate
 Sodium carboxymethyl cellulose
 Sodium cetyl sulfate

Sodium C12-15 pareth-15 sulfonate
 Sodium isostearyl lactylate
 Sodium laureth-17 carboxylate
 Sodium lauroyl lactylate
 Sodium lauryl sulfate
 Sodium nonoxynol-6 phosphate
 Sodium octyl sulfate
 Sodium oleate
 Sodium oleyl sulfate
 Sodium phosphate
 Sodium stearoyl lactylate
 Sorbeth-20
 Sorbitan isostearate, S. laurate
 Sorbitan oleate, S. palmitate
 Sorbitan sesquisteate
 Sorbitan sesquioleate, S. sesquisteate
 Sorbitan stearate, S. trisostearate
 Sorbitan trioleate, S. tristearate
 Soyamidopropyl dimethylamine
 Soyamine
 Stearamide DEA
 Stearamide DIBA-stearate
 Stearamidoethyl diethylamine
 Stearamidopropyl dimethylamine lactate
 Stearamidopropyl PG-dimonium chloride phosphate
 Stearamine
 Stearamine oxide
 Steareth-2, -4, -6, -7, -10, -11, -13
 Steareth-2 phosphate
 Steareth-15, -20, -21, -30, -100
 Stearic acid
 Sucrose cocoate, S. distearate
 Sucrose stearate
 Synthetic beeswax
 Tallow glyceride, acetylated hydrogenated
 Tallowamide DEA

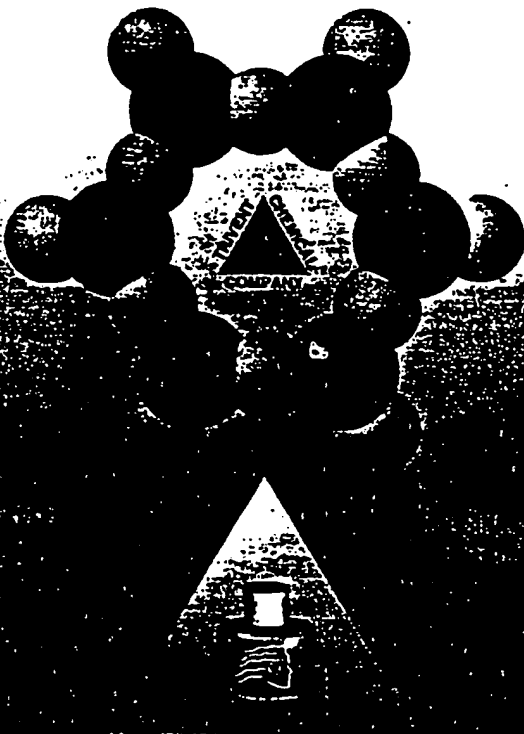
Tallowamidopropyl dimethylamine
 Talloweth-6
 Tetrasodium dicarboxyethyl stearyl sulfosuccinamide
 TEA-acrylates/acrylonitril copolymer
 Tissue extract
 Triceteareth-4 phosphate
 Trideceth-3, -5, -6, -7, -8
 Trideceth-9, -10, -12, -15
 Tridecyl ethoxylate
 Triethanolamine
 Trilaureth-4 phosphate
 Triolein
 Trisodium HEDTA
 Tristearin

Enzyme

Fermented vegetable
 Ganoderma lucidum oil
 Lipase
 Papain
 Soy (Glycine soja) protein
 Superoxide dismutase

Essential oil

Aesculus chinensis extract
 Artemisia apiacea extract
 Brassica rapa-depressa extract
 Caraway (Carum carvi) oil
 Cardamon (Elettaria cardamomum) oil
 Clove (Eugenia caryophyllus) oil
 Eclipta alba extract
 Eucalyptus globulus oil
 Euphorium fortunei extract
 Euterpe precatatoria extract
 Hierochloa odorata extract
 Kadsura heteroloba extract



Trivent Chemical Company, Inc.

4266 US Rt. 1, P.O. Box 194 • Monmouth Junction, NJ 08852 • 908-438-0995 • Fax 908-438-1020

Functions

Ligustrum lucidum extract
 Lysimachia foenum-graecum extract
 Melaleuca bracteata extract
 Melaleuca hypericifolia extract
 Melaleuca symphyocarp extract
 Melaleuca uncinata extract
 Melaleuca wilsonii extract
 Nasturtium sinensis extract
 Nelumbium speciosum extract
 Paulownia imperialis extract
 Rosemary (Rosmarinus officinalis) oil
 Selinum spp. extract
 Trichomonas japonica extract
 Withania somniferum extract
 Yuzu oil
 Ziziphus jujuba extract

Exfoliant

Apricot (Prunus armeniaca) kernel powder
 Glycolic acid
 Jojoba (Buxus chinensis) seed powder
 Lactic acid
 Papain
 PEG 11-Avocado Glycerylides
 Willow (Salix alba) bark extract

Fiber

Corn (Zea mays) cob powder
 Nylon-66
 Oat (Avena sativa) bran, meal
 Rayon

Film former

Acetylated lanolin
 Acrylates/hydroxyesters acrylates copolymer
 Acrylates/octylacrylamide copolymer
 Acrylates copolymer
 Alkylated polyvinylpyrrolidone
 Ammonium acrylates/acrylonitrile copolymer
 Betaglucon
 Bladderwrack (Fucus vesiculosus) extract
 Carboxymethylchitosan
 N,O-Carboxymethylchitosonium
 Chitosan lactate
 Collagen
 Collagen phthalate
 Colloidal oatmeal
 Desamido collagen
 Diisostearyl trimethylolpropane siloxy silicate
 DMHF
 Ethyl ester of hydrolyzed silk
 Ethylcellulose
 Gellan gum
 Glycerin/diethylene glycol/adipate crosspolymer
 High beta-glucan barley flour
 Hydrolyzed collagen
 Hydrolyzed keratin
 Hydrolyzed oat protein
 Hydrolyzed pea protein
 Hydrolyzed reticulon
 Hydrolyzed RNA
 Hydrolyzed silk
 Hydrolyzed soy protein
 Hydrolyzed wheat protein
 Hydrolyzed wheat protein/dimethicone copolyol phosphate copolymer
 Hydrolyzed wheat protein/PVP copolymer
 Hydroxypropylcellulose
 Hydroxypropyltrimonium gelatin
 Jojoba (Buxus chinensis) oil
 Lactoglobulin
 Myristoyl hydrolyzed collagen
 Nitrocellulose
 Oat (Avena sativa) extract, protein
 Polyethylene, ionomer
 Polyquaternium-6, -7, -11, -22, -39
 Polyvinyl acetate, P. alcohol
 Pseudocollagen

PVM/MA decadiene crosspolymer
 PVP/Dimethiconylacrylate/polycarbamyl/polyglycol ester
 PVP/dimethylaminocethylmethacrylate copolymer
 PVP/dimethylaminoethylmethacrylate/polycarbamyl/polyglycol ester
 PVP/eicosene copolymer
 PVP/hexadecene copolymer
 PVP/hydrolyzed wheat protein copolymer
 Rice peptide
 Sericin
 Shea butter (Butyrospermum parkii)
 Shellac
 Sodium C12-15 pareth-7 sulfonate
 Sodium hyaluronate
 Soluble collagen
 Soluble keratin
 Soluble wheat protein
 TEA-acrylates/acrylonitrile copolymer
 Tosylamide/epoxy resin
 Tricortanil PVP
 Triethionium hydrolyzed collagen ethosulfate
 Wheat peptide

Fixative

Acrylates copolymer
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer
 AMP-acrylates copolymer
 Hydrolyzed zein
 Methacryloyl ethyl betaine/acrylates copolymer
 Methyl rosinat
 Polyquaternium-4, -10, -29
 PPG-20 methyl glucose ether
 Sodium polystyrene sulfonate

Flavor (aroma)

Benzaldehyde
 Caraway (Carum carvi) oil
 Cardamon (Elettaria cardamomum) oil
 Cinnamon (Cinnamomum casia) oil
 Clove (Eugenia caryophyllus) oil
 Ethyl vanillin
 Eucalyptus globulus oil
 Flavor (aroma)
 Glutamic acid
 Glycyrrhetic acid
 Glycyrrhizic acid
 Glycyrrhizin, ammoniated
 Methyl salicylate
 Orange (Citrus aurantium dulcis) oil
 Peppermint (Mentha piperita) oil
 Rosemary (Rosmarinus officinalis) oil
 Sodium glycyrrhizinate
 Thymol
 Vanillin

Foam booster

Alkyldimethylamine oxide
 Babassuamidopropyl betaine
 Babassuamidopropylamine oxide
 Caprylyl pyrrolidone
 Carthagenan (Chondrus crispus)
 Cocamide DEA, C. MIPA
 Cocamidopropyl betaine
 Cocamidopropyl dimethylamine lactate
 Cocamidopropyl hydroxysultaine
 Coco-betaine
 Coco/oleamidopropyl betaine
 Cocoyl amido hydroxy sulfo betaine
 Cocoyl monoethanolamide ethoxylate
 DEA-hydrolyzed lecithin
 Dimethyl lauramide
 Disodium cocamido MEA-sulfosuccinate
 Disodium cocoamphodiacetate
 Disodium lauramide MEA-sulfosuccinate
 Disodium laureth sulfosuccinate
 Lauramide MIPA

Lauramidopropyl betaine
 Lauryl betaine
 Myristamidopropyl dimethylamine dimethicone copolyol phosphate
 Myristamine oxide
 Octyldodecyl benzoate
 Oleamide DEA, O. MIPA
 Oleyl betaine
 Palm kernelamide DEA
 PEG-3 lauramine oxide
 PPG-15 stearyl ether benzoate
 PEG-7000
 Sodium cocoamphoacetate
 Sodium cocoyl isethionate
 Sodium laureth sulfate
 Sodium lauroyl wheat amino acids
 Sodium octoxynol-2 ethane sulfonate
 Soyamidopropyl betaine
 Tallowamide MEA

Foam stabilizer

Babassuamidopropylamine oxide
 Behenamine oxide
 Caprylyl pyrrolidone
 Cetamine oxide
 Cocamide DEA, C. MEA, C. MIPA
 Cocamidopropyl betaine
 Cocamidopropyl hydroxysultaine
 Cocamidopropyl lauryl ether
 Cocamidopropylamine oxide
 Cocamine oxide
 Dihydroxyethyl C12-15 alkoxypropylamine oxide
 Dihydroxyethyl cocamine oxide
 Dihydroxyethyl tallowamine oxide
 Erucamidopropyl hydroxysultaine
 Hydroxypropyl methylcellulose
 Isostearamide DEA
 Lauramide DEA, L. MEA
 Lauramidopropylamine oxide
 Lauramine oxide
 Laureth-10
 Lauric-linoleic DEA
 Lauroyl-linoleoyl diethanolamide
 Lauroyl-myristoyl diethanolamide
 Lauryl pyrrolidone
 Linoleamide MEA
 Myristamide DEA, M. MEA
 Oleamide MEA
 Palmitamide MEA
 PEG-3 lauramide
 PEG-4 oleamide
 Ricinoleamide MEA
 Sesamide DEA
 Wheat germamide DEA

Foamer

Ammonium laureth sulfate
 Ammonium laureth-5 sulfate
 Ammonium laureth-12 sulfate
 Ammonium lauryl sulfate, A. I. sulfosuccinate
 Ammonium myreth sulfate
 Ammonium nonoxynol 4 sulfate
 Capryl caprylylglucoside
 Cetyl betaine
 Cocamide
 Cocamidopropyl dimethylamine
 Cocamidopropyl dimethylamine lactate
 DEA-laureth sulfate
 DEA lauryl sulfate
 Decyl glucoside
 Disodium caproamphodiacetate
 Disodium caproamphodipropionate
 Disodium capryloamphodiacetate
 Disodium cocoamphodipropionate
 Disodium lauroamphodiacetate
 Disodium lauroamphodipropionate
 Disodium lauryl sulfosuccinate
 Disodium oleamide MEA-sulfosuccinate

Functions

Disodium oleamido MIPA-sulfosuccinate
 Disodium PEG-4 cocoamido MIPA-sulfosuccinate
 Isostearamidopropylamine oxide
 Lauryl glucoside
 Methyl gluceth-20
 MEA-laureth sulfate
 Mixed isopropanolamines myristate
 MIPA-lauryl sulfate
 PEG-80 sorbitan laurate
 PEG lauryl ether sulfate
 Potassium cocoate, P. lauryl sulfate
 Quillaja saponaria extract
 Sodium caproamphoacetate
 Sodium capryloamphoacetate
 Sodium capryloamphohydroxypropylsulfonate
 Sodium cocoamphoacetate
 Sodium cocoamphopropionate
 Sodium C12-15 pareth-25 sulfate
 Sodium C12-15 pareth-3 sulfonate
 Sodium C12-15 pareth-15 sulfonate
 Sodium C14-16 olefin sulfonate
 Sodium deceth sulfate
 Sodium laureth-2 sulfate
 Sodium laureth-3 sulfate
 Sodium laureth-7 sulfate
 Sodium lauriminodipropionate
 Sodium laurylether sulfosuccinate
 Sodium lauryl sulfate, S. I. sulfoacetate
 Sodium lauryl sulfosuccinate
 Sodium magnesium laureth sulfate
 Sodium myreth sulfate, S. myristyl sulfate
 Sodium trideceth sulfate
 Sodium tridecyl sulfate
 TEA-dodecylbenzenesulfonate
 TEA-laureth sulfate
 TEA-lauroyl collagen amino acids
 TEA-lauroyl keratin amino acids
 TEA-lauryl sulfate
 TEA-palm kernel sarcosinate
 Wheat germamidopropyl betaine
 Yucca vera extract

Fragrance

Chamaecyparis obtusa oil
 Orange (Citrus aurantium dulcis) oil
 Peppermint (Mentha piperita) oil
 Phenethyl alcohol

Fragrance solvent

Benzyl benzoate
 Diethyl phthalate
 Triacetin
 Triethyl citrate

Fungicide

Asrocaryum murumuru extract
 Azadirachta indica extract
 Captan
 Diiodomethyltolylsulfone
 Ficus racemosa extract
 Hexetidine
 Ligusticum jeholense extract
 Mauritia flexosa extract
 Melaleuca symphyocarp extract
 Melia australasica extract
 Melia azadirachta extract
 Mushroom (Cordyceps sabolifera) extract
 Mushroom (Coriolus versicolor) extract
 Sodium undecylenate
 Tea tree (Melaleuca alternifolia) oil
 Thiabendazole
 Undecylenamide MEA
 Zinc undecylenate
 Ziziphus jujuba extract

Gellant

Acrylic acid/acrylonitrogens copolymer
 Agar
 Algin

Aluminum distearate, A. tristearate
 Ammonium acrylates/acrylonitrogens copolymer
 Behenic acid
 Calcium alginate
 Carbomer
 Carboxymethylchitosan
 N,O-Carboxymethylchitosonium
 Carrageenan (Chondrus crispus)
 Ceresin
 Cetearyl candelillate
 Dibenzylidene sorbitol
 Ethylene/acrylic acid copolymer
 Ethylene/VA copolymer
 Gellan gum
 Hexanediol behenyl beeswax
 Hydrogenated jojoba oil
 Hydrogenated jojoba wax
 Hydroxystearic acid
 Jojoba wax
 Laneth-5, -15
 Montmorillonite
 Myreth-3-octanoate
 Octacosanyl stearate
 Oleth-3 phosphate
 Oleth-10 phosphate
 Poloxamer 105, 123, 124, 185, 235
 Poloxamer 237, 238, 338, 407
 Polyethylene
 Polyethylene, oxidized
 Polyquaternium-31
 Potassium alginate, P. chloride
 Sodium nonoxynol-6 phosphate
 Sodium tallowate
 Synthetic beeswax
 TEA-acrylates/acrylonitrogens copolymer
 Tribehenin

Glosser

C18-36 acid glycol ester
 Diphenyl dimethicone
 Methyl gluceth-10
 Octyldodecyl lactate
 Phenyl methicone, P. trimethicone
 Polyglyceryl-2 dioleate
 Polyisobutene
 Polyisobutene/isohexapentacontahexane
 Polyisobutene/isooctahexacontane
 Polymethacrylamidopropyltrimonium chloride
 PPG-10 methyl glucose ether
 PPG-36 oleate
 Tea (Camellia sinensis) oil
 Tribehenin

Hair care

Gentiana scabra extract
 Maidenhair fern extract
 Nicotinamide
 Nicotinic acid
 Paeonia lactiflorum extract
 Watercress (Nasturtium officinale) extract

Hair conditioner

Amino bispropyl dimethicone
 Amodimethicone
 AMPD-isostearyl hydrolyzed collagen
 Aqua Ichthammol
 Babassu (Orbignya oleifera) oil
 Babassuamidopropalkonium chloride
 Behenamidopropyl dimethylamine
 Behenamidopropyl hydroxyethyl dimonium chloride
 Behentrimonium chloride
 Biotin
 Bishydroxyethyl biscetyl malonamide
 Borageamidopropyl phosphatidyl PG-dimonium chloride
 Brazil nut (Bertholletia excelsa) oil

Cetearyl trimonium methosulphate
 Cetrimonium bromide, C. chloride
 Cetyl pyridinium chloride
 Chia (Salvia hispanica) oil
 Chrysanthemum morifolium extract
 Cinchona succirubra extract
 Cocamidopropyl dimethylamine propionate
 Coccinea indica extract
 Cocodimonium hydroxypropyl hydrolyzed collagen
 Cocodimonium hydroxypropyl hydrolyzed keratin
 Cocodimonium hydroxypropyl silk amino acids
 Cocodimonium hydroxypropyl hydrolyzed wheat protein
 Cocodimonium hydroxypropyloxyethyl cellulose
 Cocotrimonium chloride
 Collagen amino acids
 Cyclomethicone
 L-cysteine HCL
 Dibehenylidimonium methosulfate
 Dicitryldimonium chloride
 Dicoocodimonium chloride
 Dihydroxyethyl tallowamine oleate
 Dimethicone
 Dimethicone copolyol acetate, D. c. almondate
 Dimethicone copolyol amine
 Dimethicone copolyol bishydroxyethylamine
 Dimethicone copolyol isostearate, D. c. laurate
 Dimethicone copolyol olivate
 Dimethicone hydroxypropyl trimonium chloride
 Dimethyl lauramine dimer dilinoleate
 Diolelamidoethyl hydroxyethylmonium methosulfate
 Dipalmitoylethyl hydroxyethylmonium methosulfate
 Diphenyl dimethicone
 Diallowdimonium chloride
 N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
 Entrada phaseoloides extract
 Ethyl ester of hydrolyzed animal protein
 Gelatin
 Ginseng hydroxypropyltrimonium chloride butylene glycol
 Hematin
 Honey (Mel)
 Hydrolyzed collagen
 Hydrolyzed hair keratin
 Hydrolyzed vegetable protein
 Hydrolyzed wheat protein/dimethicone copolyol acetyl copolymer
 Hydrolyzed wheat protein hydroxypropyl polysiloxane
 Hydroxyethyl cetyltrimonium phosphate
 Hydroxypropyltrimonium hydrolyzed collagen
 Hydroxypropyl trimonium hydrolyzed wheat protein polysiloxane copolymer
 Hyssop (Hyssopus officinalis) extract
 Inga edulis extract
 Isostearamidopropylamine oxide
 Isostearyl hydrolyzed collagen
 Keratin amino acids
 Kiwi (Actinidia chinensis) fruit extract
 Kola (Cola acuminata) extract
 Laminaria japonica extract
 Laurimonium chloride
 Lauryl hydroxypropyl trimonium polysiloxane copolymer
 Lauryldimethylamine isostearate
 Lauryldimonium hydroxypropyl hydrolyzed collagen
 Lauryldimonium hydroxypropyl hydrolyzed wheat protein
 Linoleamidopropyl dimethylamine dimer dilinoleate
 Linoleamidopropyl dimethylamine
 Lysimachia foenum-graecum extract
 Metaleuca hypericifolia extract
 Ocimum sanctum extract
 Olealkonium chloride

Functions

Oleyl dimethylamidopropyl ethonium ethosulfate
 Palmitamidodecanediol
 Panthenyl ethyl ether
 Paulownia imperialis extract
 Peach (*Prunus persica*) leaf extract
 PEG-2 cocomonium chloride
 PEG-120 jojoba acid/alcohol
 PG-hydroxycellulose lauryldimonium chloride
 PG-hydroxyethylcellulose cocodimonium chloride
 PG-hydroxyethylcellulose lauryldimonium chloride
 PG-hydroxyethylcellulose stearyldimonium chloride
 Phenyl trimethicone
 Phospholipids
 Phytantriol
 Polyoxyethylene polyoxypropylene glycol
 Polypropylene glycol
 Polyquaternium-4, -6, -7, -10
 Polyquaternium-22, -28, -39
 PPG-5-ceteih-10 phosphate
 Propyltrimonium hydrolyzed collagen
 Propyltrimonium hydrolyzed soy protein
 Propyltrimonium hydrolyzed wheat protein
 Quaternium-18, -75, -81, -82
 Quaternium-79 hydrolyzed keratin
 Quaternium-79 hydrolyzed silk
 Sambucus nigra extract, oil
 Sesamidopropalkonium chloride
 Silicone quaternium-1, -8
 Sodium cocoamphoacetate
 Sodium cocoyl hydrolyzed collagen
 Sodium polystyrene sulfonate
 N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
 Steapyrium chloride
 Stearalkonium chloride
 Stearimidopropyl dimethylamine
 Steardimonium hydroxypropyl hydrolyzed wheat protein
 Steartrimonium chloride
 Steartrimonium hydroxyethyl hydrolyzed collagen
 N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
 Stenocalyx micalii extract
 Sulfur
 Tallowbenzylidimethylammonium chloride, hydrogenated
 Tallowtrimonium chloride
 Tea (*Camellia sinensis*) oil
 TEA-cocoyl hydrolyzed soy protein
 Thenoyl methionate
 Trimethylsilylamodimethicone
 Wheat amino acids

Hair set resin polymer

Acrylates/acrylamide copolymer
 Acrylates/PVP copolymer
 Acrylates/hydroxyesters acrylates copolymer
 Acrylates/octylacrylamide copolymer
 AMP-acrylates copolymer
 Butylester of PVM-MA copolymer
 Carboxylated vinylacetate terpolymer
 Diglycol/CHDM/isophthalates/SIP copolymer
 Eclipta alba extract
 Ethyl ester of PVM/MA copolymer
 Hydroxypropyl chitosan
 Isopropyl ester of PVM/MA copolymer
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer
 Polymethacrylamidopropyltrimonium chloride
 Polypropylene glycol oligosuccinate
 PVP
 PVP/dimethylaminoethylmethacrylate copolymer
 PVP/Polycarbonyl polyglycol ester
 PVP/VA copolymer
 PVP/VA-vinyl propionate copolymer
 Sodium polyacrylate

VA/butyl maleate/isobornyl acrylate copolymer
 VA/crotonates/vinyl neodecanoate copolymer
 VA/crotonates/vinyl propionate copolymer
 VA/crotonates copolymer
 Vinyl caprolactam/PVP/
 dimethylaminoethylmethacrylate copolymer

Hair sheen

Maidenhair fern extract
 Tetrahydroxypropyl methicone

Hair waving

Ammonium thioglycolate, A. thiolactate
 Argania spinosa oil
 L-cysteine HCL
 Cystine
 Diammonium dithiodiglycolate
 Dilauryl thioldipropionate
 Ethanolamine sulfite, E. thioglycolate
 Ethanolamine thiolactate
 Glyceryl thioglycolate
 Hydroxymethyl dioxazabicyclooctane
 Jojoba esters
 Monoethanolamine thiolactate
 Shea butter, ethoxylated
 Sodium thioglycolate
 Thioglycenn
 Thioglycolic acid
 Thiolactic acid

Humectant

Acetamide MEA
 Acetyl monoethanolamine
 6-(N-Acetyl amino)-4-oxyhexyltrimonium chloride
 Adenosine phosphate
 Ammonium lactate
 Atelocollagen
 Calcium pantothenate
 Calcium stearyl lactylate
 Carboxymethyl chitin
 Carboxymethyl chitosan succinamide
 Chitosan PCA
 Cholesteryl hydroxystearate
 Collagen amino-polysiloxane hydrolyzate
 Colloidal oatmeal
 Copper PCA methylsilanol
 Dimethicone copolyol laurate
 Dipotassium glycyrrhizinate
 Ethyl ester of hydrolyzed silk
 Fatty quaternary amine chloride complex
 Glucose glutamate
 Glycereth-4,5-lactate
 Glycereth-7, -12, -26
 Glycerin
 Honey extract
 Hydrogenated passion fruit oil
 Hydrolyzed casein
 Hydrolyzed fibronectin
 Hydrolyzed glycosaminoglycans
 Hydrolyzed oat protein
 Hydrolyzed silk
 Hydrolyzed soy protein
 Hydroxypropyl chitosan
 Hydroxypropyltrimonium hydrolyzed casein
 Hydroxypropyltrimonium hydrolyzed silk
 Hydroxypropyltrimonium hydrolyzed soy protein
 Hydroxypropyltrimonium hydrolyzed wheat protein
 Keratin amino acids
 Lactamide DGA, MEA
 Lactamidopropyl trimonium chloride
 Lactic acid
 Lactose
 Lauroyl lysine
 Maltitol
 Mannitol
 Methyl gluceth-10, -20
 Natto gum
 Oat (*Avena sativa*) extract, protein
 Panthenol

Panthenyl ethyl ether
 PCA
 PEG-4
 Polyamino sugar condensate
 Potassium lactate
 Propylene glycol
 Propyltrimonium hydrolyzed collagen
 Propyltrimonium hydrolyzed soy protein
 Propyltrimonium hydrolyzed wheat protein
 Quaternium-22
 Rice (*Oryza sativa*) germ oil
 Sea Salts (Maris sal)
 Shea butter (*Butyrospermum parkii*)
 Silk powder
 Sodium behenoyl lactylate
 Sodium caproyl lactylate
 Sodium cocoyl lactylate
 Sodium hyaluronate
 Sodium isostearoyl lactylate
 Sodium lactate, S. lauroyl lactylate, S. PCA
 Sodium polyglutamate
 Sodium stearoyl lactylate
 Sorbitan laurate
 Sorbitan sesquiosostearate
 Sorbitol
 Sphingolipids
 TEA-PCA
 Urea

Hydrotrope

Ammonium cumenesulfonate
 Ammonium xylenesulfonate
 Cetamine oxide
 Cocamidopropylamine oxide
 Lauramine oxide
 Potassium toluenesulfonate
 PPG-2-isodeceth-4, -6, -9, -12
 Sodium cumene sulfonate
 Sodium laureth-13-carboxylate
 Sodium toluene sulfonate
 Sodium xylene sulfonate
 Trideceth-19-carboxylic acid

Intermediate

Caprylic acid
 Deceth-3
 Diethyl succinate
 Dimethylaminopropylamine
 DM hydantoin
 Dodecylbenzene sulfonic acid
 Ethylene dichloride
 4-Fluoro 3-nitro aniline
 Lauramine
 Methyl benzoate, M. cocoate
 Methyl isostearate, M. laurate
 Methyl myristate, M. palmitate
 Oleic acid
 Ricinoleic acid
 Tall oil acid
 Tallow acid

Lathering agent

Ammonium cocoyl sarcosinate
 Ammonium C12-15 alkyl sulfate
 Ammonium lauroyl sarcosinate
 Cocamide MEA ethoxylate
 Cocamidopropyl dimethylaminohydroxypropyl hydrolyzed collagen
 Lauroyl sarcosine
 Myristoyl sarcosine
 Sodium cocoyl sarcosinate
 Sodium lauroyl sarcosinate
 Sodium methyl cocoyl taurate
 Sodium myristoyl sarcosinate
 TEA-cocoyl sarcosinate
 TEA-lauroyl sarcosinate

Lubricant

Aluminum salt octenyl succinate
 Amodimethicone

Functions

Boron nitrile
 Calcium aluminum borosilicate
 Calcium stearate
 Caprylic/capric triglyceride
 Coceth-7 carboxylic acid
 Coconut (Cocos nucifera) oil
 Cyclomethicone
 Diisodecyl adipate
 Diisostearyl fumarate
 Dimethicone copolyol
 Glyceryl isostearate, G. oleate
 Glyceryl polymethacrylate
 Gold of Pleasure oil
 Hyaluronic acid
 Hydrogenated coconut oil
 Hydrogenated cottonseed oil
 Hydrogenated palm oil
 Hydrogenated soybean/cottonseed oil
 Hydrogenated soybean oil
 Hydrogenated vegetable oil
 Hydrolyzed oat flour
 Hydroxypropyl guar
 Isodecyl stearate
 Isopropyl lanolate
 Isostearyl diglyceryl succinate
 Jojoba esters
 Lanolin oil
 Laureth-3 phosphate
 Magnesium myristate, M. stearate
 Mango (Mangifera indica) oil
 Mineral oil (Paraffinum liquidum)
 Mink oil
 Monostearyl citrate
 Neatsfoot oil
 Oleostearine
 Partially hydrogenated soybean oil
 PEG-2 stearate
 PEG-4 dilaurate
 PEG-5M
 PEG-9M
 PEG-23M
 PEG-27 lanolin
 PEG-30 lanolin
 PEG-40 lanolin, P. stearate
 PEG-45M
 PEG-90M
 PEG-160M
 PEG/PPG-17/6 copolymer
 Pentaerythrityl tetrapelargonate
 Petrolatum
 Phenethyl dimethicone
 Phenyl methicone
 Polyacrylamidomethylpropane sulfonic acid
 Polybutene
 Polydimethicone copolyol
 Polyglycerol ester of mixed vegetable fatty acids
 Polymethylsilsesquioxane
 Potassium laurate, P. myristate
 Potassium tallowate
 PPG-2 myristyl ether propionate
 PPG-3 myristyl ether
 PPG-9-buteth-12
 PPG-11 stearyl ether
 PPG-12-buteth-16
 PPG-12-PEG-50 lanolin
 PPG-14 butyl ether
 PPG-20 cetyl ether
 PPG-20-buteth-30
 PPG-24-buteth-27
 PPG-28-buteth-35
 PPG-36 oleate
 PPG-40 butyl ether
 Quaternium-79 hydrolyzed keratin
 Quaternium-79 hydrolyzed silk
 Rice (Oryza sativa) starch
 Shea butter (Butyrospermum parkii) extract
 Shorea stenoptera butter
 Silica
 Stearamide MEA, S. MEA-stearate
 Stearoxymethylsilane

Stearyl dimethicone
 Trisostearyl citrate
 Triolein
 Trisodium HEDTA
 Triundecanoin
 Zinc laurate, Z. stearate

Miscellaneous

Adhesion promoter—Glycerin/diethylene glycol/adipate crosspolymer
Analgesic—Glycol salicylate
Anesthetic—Benzocaine
Anti-elastic—Hydrolyzed Ulva lactuca extract
Anti-itching—Sodium shale oil sulfonate
Antiacid—Magnesium hydroxide, Magnesium silicate, Simethicone
Antifoam—Dimethicone silylate, Simethicone
Antilipase—Laminaria saccharina extract
Antipruritic—Coal tar
Antispasmodic—Garlic (Allium sativum) extract
Antiwrinkle—Chinese hibiscus (Hibiscus rosa-sinensis) extract
Barrier—Glycerin/diethylene glycol/adipate crosspolymer
Cell regeneration—Glycoproteins, Hydrolyzed Ulva lactuca extract
Co-emulsifier—Cholesteryl/beheryl/octyldodecyl lauroyl glutamate, Isododecane
Colloid—Gelatin
Cooling agent—Menthyl PCA, Menthone glycerin acetal
Detaxifier—Clover (Trifolium pratense) extract
Dye stabilizer—Uric acid
Filler—Mica
Fragrance stabilizer—2,2',4,4'-Tetrahydroxybenzophenone
Free radical scavenger—Melanin
IR filter—Corallina officinalis

Lanolin substitute—PEG-80 jojoba acid/alcohol
Lipolytic—Gelidium cartilagineum
Oxidant—Barium peroxide, Hydrogen peroxide, Urea peroxide
Oxygen carrier—Perfluorodecalin
Peroxide stabilizer—Phenacetin, Sodium suannate
Scalp stimulant—Birch (Betula alba) leaf extract
Sebostatic—Laminaria saccharina extract
Shine enhancer—Hydrolyzed wheat protein hydroxypropyl polysiloxane
Skin barrier lipid—Ceramide 3, N(27-Stearoyloxy-heptacosanoyl) phytosphingosine
Skin clarifier—Oat (Avena sativa) bran extract
Skin purifier—Birch (Betula alba) leaf extract
Substantiviv—Dimethicone copolyol bishydroxyethylamine, Dimethicone hydroxypropyl trimonium chloride, Trimethylsilylamodimethicone
Sunless tanning—Acetyl tyrosine, Eclipta alba extract in white emulsion
Tonic—Kiwi (Actinidia chinensis) fruit extract, Mauricaria (Chamomilla recutita) extract, Orange (Citrus aurantium dulcis) peel extract
Viscosity stabilizer—Diisodecyl adipate
Spreading agent—Stearyl heptanoate
Wound healing—Comfrey (Symphytum officinale) leaf extract
Waterproofing agent—PVP/eicosene copolymer, PVP/hexadecene copolymer, Tricontanyl PVP

Moisture barrier

Acrylates/octylarylamide copolymer
 Betaglucon
 C16-18 alkyl methicone
 Cholesterol
 Glycolipids
 Isoeicosane

BERNEL

CHEMICAL COMPANY

Up to date, innovative technology for the cosmetic industry has been the driving force behind Bernel Chemical Company since its founding in 1982. Combining over 60 years of cosmetic expertise and marketing knowledge, we have introduced more than 20 raw materials for use by the cosmetic chemist.

Our product is innovation. Finding unique materials, such as MARRIX SF and CUPL[®] PIC, that contribute to the growth of our customers has established Bernel products worldwide.

BERNEL
 CHEMICAL COMPANY

174 Grand Ave., Englewood, NJ 07631
 Phone: 201-569-8934 • Fax: 201-569-1741

Functions

Isohexadecane	Embolica officinalis extract	Methylsilanol elasinolate, M. mannuronate
Lanosterol	Ethyl minkate	Milk amino acids
Octyl pelargonate, O. stearate	Eugenia jambolana extract	Mineral oil (Paraffinum liquidum)
Polyisobutene	Evening primrose (Oenothera biennis) extract, oil	Molybdenum aspartate
Polyisobutene/isohexapentacontahexane	Galla sinensis extract	Mouriri apiranga extract
Polyisobutene/isooctahexacontane	Ganoderma lucidum oil	Natto gum
Silica silylate	Ginseng (Panax ginseng) extract	Nelumbium speciosum extract
Trihydroxypalmitylamidohydroxy propyl myristyl ether	Gleditsia sinensis extract	Neopentyl glycol dicaprate
Trimethylsiloxysilicate	Glycereth-12	Oat (Avena sativa) protein
	Glyceryl alginate, G. collagenate	Octyl hydroxystearate
	Glyceryl polymethacrylate	Ophiopogon japonicus extract
	Glycolic acid	Orange (Citrus aurantium dulcis) peel wax
	Glycolipids	Palmetto extract
	Glycosaminoglycans	Pantethine
	Glycosphingolipids	Panthenyl ethyl ether
	Gnetum amazonicum extract	Paraffin
	Grape (Vitis vinifera) seed oil	Partially hydrogenated soybean oil
	Hazel (Corylus avellana) nut oil	Peanut (Arachis hypogaea) oil
	Honey extract	Pecan (Carya illinoensis) oil
	Hyaluronic acid	PEG-4, -6, -8, -12
	Hybrid safflower (Carthamus tinctorius) oil	PEG-70 mango glycerides
	Hydrogenated castor oil	PEG-75 shea butter glycerides
	Hydrogenated coconut oil	PEG-75 shorea butter glycerides
	Hydrogenated cottonseed oil	PEG-100 stearate
	Hydrogenated lecithin	Pentaerythrityl isostearate/caprate/caprylate/adipate
	Hydrogenated palm oil	Pentaerythrityl stearate/caprate/caprylate/adipate
	Hydrogenated polyisobutene	Pentylene glycol
	Hydrogenated soybean oil	Perfluoropolyethylisopropyl ether
	Hydrogenated soybean/cottonseed oil	Petrolatum
	Hydrogenated vegetable oil	Petroleum wax
	Hydrolyzed carbolipoprotein	Pfaffia spp. extract
	Hydrolyzed collagen	Pistachio (Pistacia vera) nut oil
	Hydrolyzed elastin	Placental protein
	Hydrolyzed fibronectin	Plankton extract
	Hydrolyzed glycosaminoglycans	Polyamino sugar condensate
	Hydrolyzed keratin	Polybutene
	Hydrolyzed milk protein	Polyunsaturated fatty acids
	Hydrolyzed oats	Potassium DNA, P. lactate, P. PCA
	Hydrolyzed pea protein	PPG-8/SMDI copolymer
	Hydrolyzed placental protein	PPG-20 methyl glucose ether distearate
	Hydrolyzed rice protein	Propylene glycol dicaprylate/dicaprate
	Hydrolyzed transgenic collagen	Propylene glycol dioctanoate
	Hydrolyzed serum protein	Pumpkin (Cucurbita pepo) seed oil
	Hydrolyzed silk	Quinoa (Chenopodium quinoa) extract
	Hydrolyzed sweet almond protein	Rapeseed (Brassica campestris) oil
	Hydrolyzed wheat protein	Rehmannia chinensis extract
	Hydroxyethyl chitosan	Rice (Oryza sativa) bran oil
	Inositol	Rose Water
	Isodecyl salicylate	Royal jelly extract
	Isostearyl hydrolyzed animal protein	Saccharide isomerate
	Jajoba (Buxus chinensis) oil	Saccharomyces lysate extract
	Jajoba esters	Saccharomyces/soy protein ferment
	Keratin amino acids	Safflower (Carthamus unctorius) oil
	Kiwi (Actinidia chinensis) fruit extract	Selenium aspartate, S. protein complex
	Kola (Cola acuminata) extract	Sericin
	Kukui (Aleurites moluccana) nut oil	Serum albumin
	Lactamide DGA, L. MEA	Sesame (Sesamum indicum) oil
	Lactic acid	Shea butter (Butyrospermum parkii)
	Lactobacillus/whey ferment	Shea butter (Butyrospermum parkii) extract
	Lactococcus hydrolysate	Shorea stenoptera butter
	Lactyl methylsilanol elasinolate	Silk amino acids
	Lanolin alcohol	Sodium carboxymethyl beta-glucan
	Lauryl PCA	Sodium chondroitin sulfate
	Lecithin	Sodium DNA, S. hyaluronate
	Lesquerella fendleri oil	Sodium lactate, S. PCA
	Liposomes	Soluble collagen
	Lysine PCA	Soluble transgenic elastin
	Macadamia ternifolia nut oil	Soybean (Glycine soja) oil
	Magnesium aspartate	Spherical cellulose acetate
	Maltitol	Spondias amara extract
	Manganese aspartate	Squalene
	Mango (Mangifera indica) oil	Stomach extract
	Mannan	Sunflower (Helianthus annuus) seed oil
	Marine polyaminosaccharide	Superoxide dismutase
	Mauritella armata extract	Tissue extract
	Maximilliana regia extract	Tocopheryl acetate, T. linoleate
	Meadowfoam (Limnanthes alba) seed oil	Tomato (Solanum lycopersicum) extract
	Melaleuca hypericifolia extract	

Functions

Tormentil (*Potentilla erecta*) extract
 Trehalose
 Triundecanoin
 Vegetable oil
 Walnut (*Juglans regia*) oil
 Watercress (*Nasturtium officinale*) extract
 Wheat (*Triticum vulgare*) germ extract, germ oil
 Yarrow (*Achillea millefolium*) extract
 Wheat amino acids
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)
 Yogurt filtrate
 Zinc aspartate
 Ziziphus jujuba extract

Naturilizer

2-Aminobutanol
 Aminoethyl propanediol
 Aminomethyl propanediol
 Aminomethyl propanol
 Ammonium carbonate
 Calcium hydroxide
 Diethanolamine
 Ethanolamine
 Glucamine
 Isopropanolamine
 Isopropylamine
 2-Methyl-4-hydroxypyrrolidine
 Morpholine
 Sodium bromate
 Succinic acid
 Tetrahydroxypropyl ethylenediamine
 Triethanolamine
 Tromethamine

Oil absorbent

Hydrated silica
 Polymethyl methacrylate
 Silicon dioxide hydrate
 Walnut (*Juglans regia*) shell powder

Ointment base

Borage (*Borago officinalis*) seed oil
 Caprylic/capric/stearic triglyceride
 Glyceryl cocoate
 Hydrogenated coco-glycerides
 Lanolin
 Mink oil
 Oleostearine
 Tallow

Opacifier

Barium sulfate
 C12-16 alcohols
 Cetearyl octanoate
 Cetyl myristate, C. palmitate
 Cocamidopropyl lauryl ether
 Glyceryl distearate
 Glyceryl hydroxystearate
 Glyceryl myristate, G. stearate
 Glycol distearate, G. stearate
 Magnesium myristate
 PEG-2 distearate, P. stearate
 PEG-3 stearate SE
 PEG-3 distearate
 Propylene glycol myristate, P. g. stearate
 Stearamide
 Stearamide DIBA-stearate
 Stearamide MEA
 Stearamide MEA-stearate
 Stearamidopropyl dimethylamine lactate

Stearyl stearate
 Styrene homopolymer
 Styrene/acrylates copolymer
 Styrene/PVP copolymer
 Triisostearin PEG-6 esters

Plasticizer

Acetyl tributyl citrate
 Acetyl triethyl citrate
 AMP-isostearoyl hydrolyzed wheat protein
 AMPD-isostearoyl hydrolyzed collagen
 Cyclohexane dimethanol dibenzoate
 Dibutyl phthalate
 Diethyl phthalate
 Diethylene glycol dibenzoate
 Diisopropyl sebacate
 Dimethicone copolyol
 Dimethyl phthalate
 Dipropylene glycol dibenzoate
 Ethyl ester of hydrolyzed keratin
 Glycerol tribenzoate
 Glycol
 Hydrolyzed serum protein
 Isocetyl salicylate
 Isodecyl benzoate
 Isoeicosane
 Isopropyl lanolate
 Isostearoyl hydrolyzed collagen
 Lauroyl hydrolyzed collagen
 Marine collagen
 Monostearyl citrate
 Neopentyl glycol dibenzoate
 Octyl benzoate, O. laurate
 PEG-60 shea butter glycerides
 Pentaerythrityl tetrabenzoate
 Polyoxyethylene glycol dibenzoate
 Polypropylene glycol dibenzoate
 PPG-12-PEG-50 lanolin
 PPG-20 cetyl ether
 PPG-20 lanolin alcohol ether
 Propylene glycol dibenzoate
 Propylene glycol myristyl ether acetate
 Rice (*Oryza sativa*) bran wax
 Serum protein
 Tosylamide/epoxy resin
 Triacetin
 Tributyl citrate
 Triethyl citrate
 Trimethyl pentanediol dibenzoate
 Trimethylethanetribenzoate

Polish

Acrylates copolymer
 Aluminum silicate
 Neatsfoot oil
 Tallow

Polymer

Acrylamide sodium acrylate copolymer
 Acrylates-VA crosspolymer
 Acrylates/acrylamide copolymer
 Acrylates/hydroxyesters acrylates copolymer
 Acrylates/octylacrylamide copolymer
 Acrylates/steareth-20 methacrylate copolymer
 Adipic acid-epoxypropyl diethylenetriamine copolymer
 Adipic acid/dimethylaminohydroxypropyl diethylene triamine copolymer
 Ammonium acrylates copolymer

Ammonium acrylates/acrylonitril copolymer
 AMP-acrylates copolymer
 AMP-isostearoyl hydrolyzed collagen
 Butyl ester of PVM-MA copolymer
 Calcium carrageenan
 Carboxylated vinylacetate terpolymer
 Ceteareth-2 phosphate
 Ceteareth-5 phosphate
 Ceteareth-10 phosphate
 Ceteareth-29, -34
 Coco-glucoside
 Cocodimonium hydroxypropylhexethyl cellulose
 C12-13 parath-4, -9, -23
 DEA-ceteareth-2-phosphate
 DEA-oleth-5-phosphate
 DEA-oleth-20-phosphate
 Diglycol/CHDM/isophthalates/SIP copolymer
 Diisopropyl dimer diinoleate
 Diisostearoyl trimethylolpropane siloxy silicate
 Diisostearyl dimer diinoleate
 Dilinoleic acid
 Dodecanedioic acid/cetearyl alcohol/glycol copolymer
 Eclipta alba extract
 Ethyl ester of PVM/MA copolymer
 Ethylene/acrylic acid copolymer
 Ethylene/VA copolymer
 Glycereth-26 phosphate
 Hyaluronic acid
 Hydrolyzed RNA
 Hydrolyzed wheat protein polysiloxane polymer
 Hydroxypropyltrimonium hydrolyzed collagen
 Hydroxypropyltrimonium hydrolyzed wheat protein
 Laneth-40
 Lauryldimonium hydroxypropyl hydrolyzed soy protein
 Methacryloyl ethyl betaine/acrylates copolymer
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer
 Oleth-3 phosphate
 Oleth-5 phosphate
 PEG-3 lanolate
 PEG-4 stearate
 PEG-5M
 PEG-7 glyceryl cocoate
 PEG-8 glyceryl laurate
 PEG-8/SMDI copolymer
 PEG-9 castor oil
 PEG-9M
 PEG-11 babassu glycerides
 PEG-12 palm kernel glycerides
 PEG-12 stearate
 PEG-14 avocado glycerides
 PEG-15 glyceryl laurate
 PEG-20 com glycerides
 PEG-20 evening primrose glycerides
 PEG-20 glyceryl oleate
 PEG-23 oleate
 PEG-23M
 PEG-29 castor oil
 PEG-42 babassu glycerides
 PEG-45 safflower glycerides
 PEG-45M
 PEG-60 evening primrose glycerides
 PEG-60 hydrogenated castor oil
 PEG-75 castor oil
 PEG-90M
 PEG-120 distearate

3 BETTER IDEAS.

CARBOPOL

 New, easiest to
 disperse carbomer

CARBOPOL

 For surfactant-based
 products

PEMULEN

 POLYMERIC EMULSIFIERS
 Eliminates surfactant-based
 emulsifiers

1 BETTER SOURCE.

BFGoodrich
 Talk to the global leader.

Functions

PEG-150 lanolin
 PEG-160M
 PG-hydroxycellulose lauryldimonium chloride
 PG-hydroxyethylcellulose cocodimonium chloride
 PG-hydroxyethylcellulose stearyldimonium chloride
 Polyethylene, ionomer
 Polyethylene, micronized
 Polyethylene, oxidized
 Polyglyceryl-2 polyhydroxystearate
 Polymethacrylamidopropyltrimonium chloride
 Polyquaternium-6, -7, -10, -11, -22, -39
 Polysilicone-8
 Potassium alginate
 Potassium lauroyl collagen amino acids
 Potassium lauroyl hydrolyzed soy protein
 Potassium lauroyl wheat amino acids
 PPG-8/SMDI copolymer
 PPG-12/SMDI copolymer
 PPG-51/SMDI copolymer
 PVM/MA decadiene crosspolymer
 PVP/dimethylaminoethylmethacrylate copolymer
 PVP/VA copolymer
 Sodium cocoyl hydrolyzed wheat protein
 Steardimonium hydroxypropyl hydrolyzed wheat protein
 Steareth-2 phosphate
 TEA-acrylates/acrylonitrogens copolymer
 Tosylamide/epoxy resin
 Tosylamide/formaldehyde resin
 Trideceth-5, -6, -7, -8
 VA/butyl maleate/isobornyl acrylate copolymer
 VA/crotonates/vinyl neodecanoate copolymer
 Vinyl caprolactam/PVP/
 dimethylaminoethylmethacrylate copolymer
 Wheat (Triticum vulgare) protein
 Xanthan gum

Powder

Acrylates copolymer, spherical powder
 Attapulgit
 Boron nitride
 Calcium aluminum borosilicate
 Calcium carbonate
 Cellulose triacetate
 Corn (Zea mays) cob powder, starch
 Hydrogenated jojoba wax
 Magnesium carbonate, M. myristate
 Magnesium stearate
 Mica
 Microcrystalline cellulose
 Nylon-6
 Nylon powder
 Oat (Avena sativa) starch
 Polyamide 12
 Polyethylene
 Polymethyl methacrylate
 Polymethylsilsesquioxane
 PTFE
 Silica
 Silk powder
 Spherical cellulose acetate
 Talc
 Tapioca dextrin
 Zinc laurate

Powder, absorbent

Aluminum starch octenylsuccinate
 Clays (white, yellow, red, green, pink)
 Sorbitol
 Tapioca

Preservative

Alcohol
 Ascorbic acid
 Ascorbyl palmitate

Benzalkonium chloride
 Benzetonium chloride
 Benzoic acid
 Benzyl alcohol
 Benzylparaben
 5-Bromo-5-nitro-1,3-dioxane
 2-Bromo-2-nitropropane-1,3-diol
 Butylparaben
 Calcium propionate
 Cetrimonium bromide
 Cetyl pyridinium chloride
 Chloroxyleneol
 Chlorphenesin
 o-Cymen-5-ol
 Diazolidinyl urea
 Dichlorobenzyl alcohol
 Dichlorophene
 Diiodomethyltolylsulfone
 Dimethyl hydroxymethyl pyrazole
 Dimethyl oxazolidine
 Disodium EDTA
 DMDM hydantoin
 EDTA
 Erythorbic acid
 7-Ethylbicyclooxazolidine
 Ethylparaben
 Fomistopsis officinalis oil
 Formaldehyde
 Glutaral
 Glyceryl laurate
 HEDTA
 Hexamidine diisethionate
 Hexetidine
 Imidazolidinyl urea
 Isobutylparaben
 Isopropyl sorbate
 Isopropylparaben
 MDM hydantoin
 Methanamonium chloride
 Methyl paraben sodium
 Methylchloroisothiazolinone
 Methylidibromo glutaronitrile
 Methylisothiazolinone
 Methylparaben
 Mushroom (Cordyceps sabolifera) extract
 Myrtrimonium bromide
 Pentasodium pentetate
 Penicic acid
 Phenethyl alcohol
 Phenol
 Phenyl mercuric acetate
 o-Phenylphenol
 Polyaminopropyl biguanide
 Polymethoxy bicyclic oxazolidine
 Potassium sorbate
 Propylparaben
 Quaternium-15
 Salicylic acid
 Sodium benzoate, S. bisulfate
 Sodium butylparaben, S. dehydroacetate
 Sodium erythorbate, S. ethyl paraben
 Sodium hydroxymethylglycinate
 Sodium metabisulfite, S. methylparaben
 Sodium o-phenylphenate
 Sodium propionate, S. propylparaben
 Sodium pyrithione, S. salicylate
 Sodium sulfite
 Sorbic acid
 Tetrasodium EDTA
 Thimerosal
 Thymol
 Tris (hydroxymethyl) nitromethane
 Trisodium EDTA, T. HEDTA
 Usmic acid
 Zinc PCA

Propellant
 Butane
 Dimethyl ether
 Hydrofluorocarbon 152a

In the World of Natural Waxes

Carnauba Wax

Beeswax

Candelilla Wax



STRAHL & PITSCH INC.

Ceresine And Ozokerite

Paraffin And Microcrystalline



There is no one else!
 Dedicated to Natural Waxes and Specialty Blends Since 1904



STRAHL & PITSCH INC., P.O. BOX 1090, 230 CREEK BASIN RD., WEST BARTON, MO 63394 U.S.A.
 (516) 587-9000 / FAX: (516) 587-9120

Functions

Isobutane
Propane

Protein

Albumen
Atelocollagen
Bletia hyacinthina extract
Chrysanthemum monifolium extract
Cocodimonium hydroxypropyl hydrolyzed collagen
Cocodimonium hydroxypropyl hydrolyzed keratin
Cocodimonium hydroxypropyl hydrolyzed soy protein
Cocodimonium hydroxypropyl hydrolyzed wheat protein
Cocoyl hydrolyzed collagen
Collagen, C. phthalate
Collagen amino-polysiloxane hydrolyzate
Deoxyribonucleic acid
Desamido collagen
Elastin amino acids
Embryo extract
Ethyl ester of hydrolyzed animal protein
Fibronectin
Gelatin
Human placental protein
Hydrolyzed collagen
Hydrolyzed extensin
Hydrolyzed fish protein
Hydrolyzed hemoglobin
Hydrolyzed keratin
Hydrolyzed lactalbumin
Hydrolyzed milk protein
Hydrolyzed soy flour
Hydrolyzed sweet almond protein
Hydroxypropyltrimonium hydrolyzed collagen
Isostearyl hydrolyzed collagen
Keratin
Lactoferrin
Lactoglobulin
Lauryldimonium hydroxypropyl hydrolyzed collagen
Marine collagen
Methylsilanol elastinate
Potassium abietoyl hydrolyzed collagen
Potassium cocoyl hydrolyzed collagen
Potassium myristoyl hydrolyzed collagen
Potassium oleoyl hydrolyzed collagen
Potassium undecylenoyl hydrolyzed collagen
Propyltrimonium hydrolyzed collagen
Propyltrimonium hydrolyzed soy protein
Propyltrimonium hydrolyzed wheat protein
Protein hydrolysates
Quaternium-79 hydrolyzed keratin
Quaternium-79 hydrolyzed silk
Rice peptide
RNA
Serum albumin, S. protein
Silk powder

Sodium caseinate
Sodium cocoyl hydrolyzed collagen
Sodium cocoyl hydrolyzed soy protein
Sodium myristoyl hydrolyzed collagen
Sodium oleoyl hydrolyzed collagen
Sodium stearoyl hydrolyzed collagen
Sodium undecylenoyl hydrolyzed collagen
Sodium/TEA-lauroyl hydrolyzed collagen
Sodium/TEA-lauroyl hydrolyzed keratin
Soluble collagen
Soluble keratin
Soluble wheat protein
Soy (Glycine soja) protein
Stearidimonium hydroxypropyl hydrolyzed collagen
Steartrimonium hydroxyethyl hydrolyzed collagen
TEA-cocoyl hydrolyzed collagen
TEA-cocoyl hydrolyzed soy protein
TEA-lauroyl collagen amino acids
TEA-lauroyl keratin amino acids
Trachea hydrolysate
Triethonium hydrolyzed collagen ethosulfate
Wheat (Triticum vulgare) germ extract, protein
Wheat amino acids
Wheat peptide
Wheat protein

Protein, hydrolyzed

Ethyl ester of hydrolyzed silk
Hydrolyzed casein
Hydrolyzed elastin
Hydrolyzed mushroom (Tricholoma matsutake) extract
Hydrolyzed pea protein
Hydrolyzed rice protein
Hydrolyzed serum protein
Hydrolyzed silk
Hydrolyzed soy protein
Hydrolyzed vegetable protein
Hydrolyzed wheat protein
Hydroxypropyltrimonium hydrolyzed casein
Hydroxypropyltrimonium hydrolyzed silk
Hydroxypropyltrimonium hydrolyzed soy protein
Hydroxypropyltrimonium hydrolyzed wheat protein

Reducing agent

Dimyristyl thiodipropionate
Hydrolyzed zein, iodized
Hydrolyzed zein, sulfonized
Zinc formaldehyde sulfoxylate

Refatting agent

Caprylic/capric triglyceride PEG-4 esters
Cocamide MIPA
Diisostearyl dimer dilinoleate
Hydrogenated palm kernel glycerides
Isostearyl erucate, I. isostearate
Lecithin

Liposomes
Magnesium sulfate hepta-hydrate
Octyldodecyl behenate, O. myristate
bis-Octyldodecyl stearoyl dimer dilinoleate
Octyldodecyl stearoyl stearate
Octyl hydroxystearate
PEG-3 stearate
PEG-4 oleamide
PEG-6 capric/caprylic glycerides
PEG-7 glyceryl cocoate
PEG-16
Propylene glycol dipelargonate

Resin

Acrylates/hydroxyesters acrylates copolymer
Ethylene vinyl acetate
Glyceryl abietate
Methacryloyl ethyl betaine/acrylates copolymer
4-Methyl benzenesulfonamide
Polypropylene
Polyquaternium-16, -14
Sucrose benzoate

Sequestant

Calcium acetate, C. phosphate, C. sulfate
Encapsulation and entrapment systems
Pentasodium triphosphate
Phosphoric acid
Potassium phosphate, P. sodium tartrate
Silicon dioxide hydrate
Sodium citrate, S. gluconate
Sorbitol
Tartaric acid
Tripotassium EDTA
Trisodium NTA

Silicone

Amino bispropyl dimethicone
Ammonium dimethicone copolyol sulfate
Amodimethicone
Behenoxy dimethicone
C16-18 alkyl methicone
Ceryl dimethicone copolyol
Cyclomethicone/Diisostearyl trimethylolpropane siloxy silicate
Diisodecyl adipate
Diisostearyl trimethylolpropane siloxy silicate
Dimethicone
Dimethicone copolyol
Dimethicone copolyol almondate
Dimethicone copolyol isostearate
Dimethicone copolyol olivate, D. c. phthalate
Dimethicone copolyolamine
Dimethiconol fluoroalcohol dilinoleic acid
Dimethiconol hydroxystearate, D. stearate
Diphenyl dimethicone
Disodium-PG-propyldimethicone thiosulfate
Isopropyl hydroxybutylamide dimethicone copolyol
Methicone

Smoother, Shinier Hair?
Try our cross-linking conditioner: **CRODASONE W**

Croda
7 Century Dr Parsippany NJ 07054 201-644-4900

BROOKS INDUSTRIES inc.

Cosmetic Ingredients & Ideas®

70 Tyler Place, South Plainfield, NJ 07080 USA
Tel 908-561-5200 Fax 908-561-9174

Proteins

Hydrocoll, Solu-Soy, Wheat-Pro

Functions

Octamethyl cyclotetrasiloxane
Phenyl methicone. P. trimethicone
Polyether Trisiloxane
Polymethylsilsequioxane
Polysilicone-8
Quaternium-80
Silicone quaternium-1, -8
Sodium-PG-propyl thiosulfate dimethicone
Stearoxymethicone/dimethicone copolymer
Trimethylsilylamodimethicone

Skin calming agent

Cornflower (*Centaurea cyanus*) extract
Fennel (*Foeniculum vulgare*) extract
Fenugreek extract
Linden (*Tilia cordata*) extract
Valerian (*Valeriana officinalis*) extract

Skin cleanser

Dog rose (*Rosa canina*) hips extract
Papaya (*Carica papaya*) extract
Peach (*Prunus persica*) extract
Rose (*Rosa multiflora*) extract
Willow (*Salix alba*) extract

Skin conditioner

Artemisia apiacea extract
Astrocaryum tucuma extract
Bactris gasipaes extract
Biotin
Bishydroxyethyl bisceryl malonamide
Bletia hyacinthina extract
Borage (*Borago officinalis*) seed oil
Borageamidopropyl phosphatidyl PG-dimonium chloride
Carbocysteine
Catalpa kaempferia extract
Coco phosphatidyl PG-dimonium chloride
Cocodimonium hydroxypropyl hydrolyzed keratin
Collagen amino acids
Cyclomethicone
Dimethicone. D. copolyol acetate
Emblia officinalis extract
Equisetum arvense extract
Ethyl ester of hydrolyzed animal protein
Evening primrose (*Oenothera biennis*) oil
Fomes fomentarius extract
Fomistopsis officinalis oil
Gelatin
Ginseng hydroxypropyltrimonium chloride
butylene glycol
Glycolipids
Glycosphingolipids
Gnetum amazonicum extract
Honey (Mel)
Hydrolyzed carbolipoprotein
Hydrolyzed elastin
Hydrolyzed pea protein
Hydrolyzed rice protein
Hydrolyzed serum protein
Hydrolyzed silk
Hydrolyzed soy protein
Hydrolyzed vegetable protein
Hydrolyzed wheat protein
Inga edulis extract
Kiwi (*Actinidia chinensis*) fruit extract
Laminaria japonica extract
Lecithin
Marsilea minuta extract
Nettle (*Urtica dioica*) extract
Palmitamidodecanediol
Pearls (*Margarita margarita*)
PEG-42 Eburico ceramides extract
Phenyl trimethicone
Phytantriol
Polygonum multiflorum extract
Polyquaternium-7, -22, -34
Potassium cocoyl hydrolyzed collagen
Retinyl palmitate polypeptide
Salvia miltiorrhiza extract
Silt
Sodium cocoyl hydrolyzed collagen
Soluble transgenic elastin
Steartrimonium hydroxyethyl hydrolyzed collagen
Stearyl methicone

Potassium cocoyl hydrolyzed collagen
Retinyl palmitate polypeptide
Salvia miltiorrhiza extract
Silt
Sodium cocoyl hydrolyzed collagen
Soluble transgenic elastin
Steartrimonium hydroxyethyl hydrolyzed collagen
Stearyl methicone

Skin healing

Calendula officinalis extract
Glycoproteins
Hydrocotyl (*Centella asiatica*) extract
Oat (*Avena sativa*) extract
Sandalwood (*Santalum album*) extract
Spearment (*Mentha viridis*) extract

Skin lightening/whitening agent

Ascorbic acid polypeptide
Bearberry (*Arctostaphylos uva-ursi*) extract
Hydroquinone-beta-D-glucopyranoside
Lemon (*Citrus medica limonum*) peel extract
Pearls (*Margarita margarita*)

Skin protectant

Acetylmethionyl methylsilanol elastinate
Allantoin. A. aluminum hydroxide
Aloe barbadensis. A. b. extract
Aluminum starch octenylsuccinate
Anise (*Pimpinella anisum*) extract
Arnica montana extract
Artemisia apiacea extract
Ascorbyl methylsilanol pectinate
Astrocaryum tucuma extract
Bactris gasipaes extract
Betaglucan
Bishydroxyethyl bisceryl malonamide
Bletia hyacinthina extract
C 18-70 Isoparaffin
Calendula amurensis extract
Carboxymethyl chitin
Carcinia cambogia extract
Carrot (*Daucus carota*) extract
Carrot (*Daucus carota sativa*) oil
Catalpa kaempferia extract
Chenopodium album extract
Chitosan
Chrysanthemum monifolium extract
Collagen
Cora poppy (*Papaver rhoeas*) extract
Crataegus cuneata extract
Crataegus monogina extract
Cypress (*Cupressus sempervirens*) extract
Dimethicone
Dimethiconol fluoroalcohol dilinoleic acid
Dimethiconol hydroxystearate. D. stearate
Dimethylsilanol hyaluronate
Echitea glauca extract
Embryo extract
Entada phaseoloides extract
Equisetum arvense extract
Eupatorium fortunei extract
Euterpe precatoria extract
Fenugreek extract
Fomistopsis officinalis oil. F. pinicola extract
Galla sinensis extract
Gentian (*Gentiana lutea*) extract
Gleditsia sinensis extract
Glyceril ricinoleate
Glycolipids
Hierochloa odorata extract
Hyaluronic acid
Hydrogenated lecithin
Hydrolyzed lupine protein
Hydrolyzed milk protein
Hydrolyzed mushroom (*Tricholoma matsutake*) extract
Indian cross (*Tournefortia maritima*) extract

Isodecyl salicylate
Jojoba (*Buxus chinensis*) oil
Lady's Thistle (*Silybum marianum*) extract
Laminaria japonica extract
Ligusticum jeholense extract
Liposomes
Magnolia spp. extract
Mango kernel oil
Marsilea minuta extract
Melaleuca hypericifolia extract
Melaleuca uncinata extract
Melaleuca wilsonii extract
Methylsilanol tri PEG-8 glyceryl cocoate
Oat (*Avena sativa*) meal
Oyster (*Osrea*) shell extract
Palmitamidodecanediol
Pearls (*Margarita margarita*)
Pentahydrosqualene
Perfluorodecalin
Perfluoropolyethylisopropyl ether
Petrolatum
PEG-8/SMDI copolymer
PEG-42 Eburico ceramides extract
Pfaffia spp. extract
Phospholipids
Plankton extract
Polygonum multiflorum extract
Pongamol
PPG-12/SMDI Copolymer
PPG-51/SMDI Copolymer
Propyltrimonium hydrolyzed collagen
Quinoa (*Chenopodium quinoa*) extract. oil
Salvia miltiorrhiza extract
Sambucus nigra extract
Shark liver oil
Shorea robusta extract
Sodium chondroitin sulfate
Soluble transgenic elastin
Steartrimonium hydroxyethyl hydrolyzed collagen
Sterculia platanifolia extract
Superoxide dismutase
Trachea hydrolysate
Wheat (*Triticum vulgare*) germ extract. protein
White nettle (*Lamium album*) extract
Withania somniferum extract
Xanthoxylum bungeanum extract
Zinc oxide

Skin smoothing agent

Althea officinalis extract
Coltsfoot (*Tussilago farfara*) leaf extract
Comfrey (*Symphytum officinale*) leaf extract
Plantain (*Plantago major*) extract
Sericin

Skin softening

Clays (white, yellow, red, green, pink)
Cucumber (*Cucumis sativus*) extract
Kelp (*Macrocystis pyrifera*) extract
Peach (*Prunus persica*) extract
Phenethyl dimethicone

Skin soothing

Calendula officinalis extract
Cherry bark extract
Cucumber (*Cucumis sativus*) extract
Garlic (*Allium sativum*) extract
Hyssop (*Hyssopus officinalis*) extract
Jasmine (*Jasminum officinale*) extract
Kelp (*Macrocystis pyrifera*) extract
Mango kernel oil
Meadowsweet (*Spiraea ulmaria*) extract
Quince (*Pyrus cydonia*) seed extract
Slippery elm extract
Valerian (*Valeriana officinalis*) extract
Willow (*Salix alba*) extract
Witch hazel (*Hamamelis virginiana*) extract
Yarrow (*Achillea millefolium*) extract

Functions

Solubilizer

Acetyl monoethanolamine
Almond oil PEG-6 esters
2-Aminobutanol
Aminoethyl propanediol
Aminomethyl propanediol, A. propanol
Apricot kernel oil PEG-6 esters
Benzalkonium chloride
Butoxydiglycol
Butyl glucoside
Butylene glycol
Butyloctanol
Capric-caprylic mono-diglyceride
Capryl caprylylglucoside
Caprylic/capric triglyceride
Caprylic/capric/linoleic triglyceride
Caprylic/capric/oleic triglycerides
Caprylyl/capryl glucoside
Ceteareth-20
Ceteth-10
Cetyl PPG-2 isodeceth-7 carboxylate
Cholesterol
Corn oil PEG-6 esters
Decaglycerol monodiolate
Diethanolamine
Dilaureth-10 phosphate
Dimethyl octynediol
Dioleth-8 phosphate
Glycereth-7 -26
Glyceryl caprylate, G. dilaureate
Glyceryl caprylate/caprate
Isocicosane
Isopropanolamine
Isosteareth-20
Laneth-5, -15
Laureth-23
Methylated cyclodextrin
Myreth-3
Myreth-3-octanoate
Nonoxynol-10, -12, -14, -40, -50
Octoxynol-11, -40
Oleoamphohydroxypropylsulfonate
Oleth-3, -5, -10, -15, -20, -25, -50
Oleth-20 phosphate
PEG-4, -6, -8, -12, -16, -20, -32, -40,
PEG-4 dilaureate
PEG-6 capric/caprylic glycerides
PEG-6 methyl ether
PEG-8 distearate
PEG-12 laurate

PEG-15 castor oil
PEG-18 stearate
PEG-20 glyceryl isostearate, P. g. laurate
PEG-20 glyceryl oleate, P. g. stearate
PEG-20 methyl glucose sesquisteate
PEG-20 sorbitan isostearate
PEG-20 sorbitan triisostearate
PEG-24 hydrogenated lanolin
PEG-25 castor oil
PEG-25 hydrogenated castor oil
PEG-30 castor oil
PEG-30 glyceryl cocoate
PEG-30 glyceryl isostearate
PEG-30 glyceryl laurate
PEG-30 glyceryl oleate
PEG-30 glyceryl stearate
PEG-33 castor oil
PEG-35 castor oil
PEG-36 castor oil
PEG-40 castor oil
PEG-40 glyceryl laurate, P. g. stearate
PEG-40 hydrogenated castor oil
PEG-40 hydrogenated castor oil PCA isostearate
PEG-40 sorbitan diisostearate
PEG-45 palm kernel glycerides
PEG-48 hydrogenated castor oil
PEG-50 castor oil
PEG-50 hydrogenated castor oil
PEG-60 almond glycerides
PEG-60 castor oil
PEG-60 corn glycerides
PEG-60 glyceryl isostearate, P. g. stearate
PEG-60 hydrogenated castor oil
PEG-60 lanolin
PEG-70 mango glycerides
PEG-75 lanolin
PEG-75 shea butter glycerides
PEG-75 shorea butter glycerides
PEG-80 hydrogenated castor oil
PEG-80 jojoba acid/alcohol
PEG-80 sorbitan laurate
PEG-100 castor oil
PEG-100 hydrogenated castor oil
PEG-120 jojoba acid/alcohol
PEG-200 trihydroxystearin
Poloxamer 407
Polyglyceryl-3 oleate
Polyglyceryl-6 dioleate
Polyglyceryl-10 decaoleate, P. tetraoleate
Polysorbate 20, 60, 80
PPG-2-isodeceth-4, -6, -9, -12

PPG-3 isosteareth-9
PPG-3 isoceteth-20 acetate
PPG-5-ceteth-10 phosphate
PPG-5-ceteth-20
PPG-6-decyltetradeceth-12, -20, -30
PPG-12-PEG-65 lanolin oil
PPG-15 stearyl ether
PPG-18 butyl ether
PPG-24 butyl ether
PPG-26-buteth-26
PPG-33 butyl ether
PPG-33-buteth-45
PPG-40-PEG-60 lanolin oil
PPG-50 cetyl ether
Propylene glycol dicaprylate, dicaprylate/
dicaprate
Ricinoleamide DEA
Ricinoleth-40
Sodium alpha olefin sulfonate
Sodium lauryl sulfate
Sodium methylnaphthalenesulfonate
Triethanolamine
Trioctanol
Tromethamine

Solvent

Acetic acid
Acetone
Alcohol, A. denat.
Benzophenone
Butoxydiglycol
Butyl acetate
n-Butyl alcohol
Butyl myristate, B. stearate
Butylene glycol
C9-11 isoparaffin
C10-11 isoparaffin
C10-13 isoparaffin
Caprylic alcohol
Castor (Ricinus communis) oil.
Cetearyl octanoate
Cetyl stearyl octanoate
Chlorobutanol
Decyl alcohol
Diethylene glycol
Diethylene glycol dibenzoate
Diethyl sebacate
Diisocetyl adipate
Diisopropyl adipate, D. sebacate
Dimethyl phthalate
Dipropylene glycol

Pigments • Preservatives • Surfactants • Emulsifiers • Emollients • Esters • Proteins • Lanolin



Costec.

We Specialize in Personal Care.

Performance Chemicals for Specialty Requirements.

Costec, Inc. • 655 First Bank Drive • Palatine, IL 60067 USA
Telephone: 847/359-5713 • Fax: 800/5 COSTEC

Aloe Vera • Jojoba Oil • Botanicals • Pigments • Preservatives • Surfactants • Emulsifiers

Functions

Dipropylene glycol dibenzoate
 Ethoxydiglycol
 Ethyl acetate, E. lactate
 Ethyl myristate, E. oleate
 2-Ethylhexyl isostearate
 Glycerin
 Glycofurol
 Heptane
 Hexyl alcohol
 Hexylene glycol
 Isobutyl stearate
 Isocetyl salicylate
 Isodecyl benzoate, I. isononanoate
 Isodecyl octanoate, I. oleate
 Isododecane
 Isoeicosane
 Isohexadecane
 Isopropyl alcohol, I. myristate
 Isostearyl stearoyl stearate
 Laureth-2 acetate
 Methoxydiglycol
 Methoxyisopropanol
 Methyl alcohol
 Methyl propanediol
 Methylene chloride
 MEK
 MIBK
 Morpholine
 Octyl benzoate, O. isononanoate
 Octyl laurate, O. palmitate
 Octyldodecyl lactate
 Olive oil PEG-6 esters
 Peanut oil PEG-6 esters
 Pentane
 Petroleum distillates
 PEG-6 methyl ether
 PEG-12
 PEG-20 hydrogenated castor oil
 PEG-33 castor oil
 PEG-50 glyceryl cocoate
 Polyglyceryl-2 dioleate
 Polyglyceryl-3 diisostearate
 Polyoxyethylene glycol dibenzoate
 Polypropylene glycol dibenzoate
 PPG-2 myristyl ether propionate
 PPG-3
 PPG-20 lanolin alcohol ether
 Propyl alcohol
 Propylene carbonate
 Propylene glycol
 Propylene glycol dibenzoate
 Propylene glycol methyl ether
 Propylene glycol myristate
 Pyridine
 Sesame (Sesamum indicum) oil
 Stearyl heptanoate
 Toluene
 Xylene

SPF booster

Borjoo sorbilis extract
 Isohexadecyl salicylate
 Styrene/acrylates copolymer
 Titanium dioxide
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)

Stabilizer

Acrylates-VA crosspolymer
 Acrylates/ceteeth-20 methacrylates copolymer
 Acrylates/steareth-20 methacrylate copolymer
 Acrylates/vinyl isodecanoate crosspolymer
 Alkyldimethylamine oxide
 C10 polycarbamyl polyglycol ester
 Calcium alginate
 Cocamidopropyl dimethylamine lactate
 Cocamine oxide
 Colloidal silica sols
 Cyclodextrin
 Disodium EDTA
 Gellan gum

Glyceryl diisostearate, G. stearate SE
 Glyceryl mono-di-tri-caprylate
 Hydrogenated coco-glycerides
 Hydrogenated C12-18 triglycerides
 Hydrogenated tallow glycerides
 Hydrolyzed oat flour
 Hydroxyoctacosanyl hydroxystearate
 Karaya (*Sterculia urens*) gum
 Laureth-3
 Maltitol
 Methylated cyclodextrin
 Oleamide
 PEG-40 stearate
 PEG-40/dodecyl glycol copolymer
 Perfluoropolyethylisopropyl ether
 Polyethylene paste
 PPG-5 lanolin wax
 PPG-7-buteth-10
 PPG-10 cetyl ether phosphate
 Propylene carbonate, P. glycol alginate
 PVM/MA decadiene crosspolymer
 Sodium acrylates/vinyl isodecanoate crosspolymer
 Sodium carboxomer
 Sorbitan laurate
 Stearic hydrazide
 2,2',4,4'-Tetrahydroxybenzophenone
 Tricaprin
 Tricaprylin
 Trilaurin
 Trimyristin
 Tripalmitin
 Tristearin

Stimulant

Capsicum frutescens extract
 Eleuthero ginseng (*Acanthopanax senticosus*) extract
 Guarana (*Paullinia cupana*) extract
 Lactococcus hydrolysate
 Methylsilanol elastinate
 Methylsilanol hydroxyproline aspartate
 TEA-hydroiodide
 Tocopheryl nicotinate
 Urocanic acid
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)
 Zedoary (*Curcuma zedoaria*) oil
 Zinc DNA

Sunscreen

Basil (*Basilicum santum*) oil extract
 Basil (*Ocimum basilicum*) extract
 Benzophenone-3 -4
 3-Benzylidene camphor
 Borjoo sorbilis extract
 C12-15 alkyl benzoate
 Coffee (*Coffea arabica*) bean extract
 Ethyl salicylate
 Glyceryl PABA
 Homosalate
 Hydroquinone-beta-D-glucopyranoside
 Isoamyl p-methoxycinnamate
 Isopropylbenzyl salicylate
 Job's tears (*Coix lacryma-jobi*) extract
 Menthyl anthranilate
 Octyl dimethyl PABA, O. methoxycinnamate
 Octyl salicylate, O. triazone
 Oryzanol
 Pansy (*Viola tricolor*) extract
 PEG-25 PABA
 Phenylbenzimidazole sulfonic acid
 Rice (*Oryza sativa*) bran oil
 TEA-salicylate
 Titanium dioxide

Sunscreen UVB

Benzophenone-5
 Eclipta alba extract
 PEG-25 PABA
 Steareth-100
 Tridecyl salicylate

Supertinting agent

Linoleamide DEA
 PEG-20 almond glycerides
 PEG-60 lanolin
 PEG-75 lanolin

Surfactant

Alkyl dimethyl betaine
 Alkyldimethylamine oxide
 Ammonium cocoyl sarcosinate
 Ammonium C12-15 alkyl sulfate
 Ammonium dimethicone copolyol sulfate
 Ammonium laureth-5 sulfate
 Ammonium laureth-12 sulfate
 Ammonium laureth sulfate
 Ammonium lauroyl sarcosinate
 Ammonium lauryl sulfate, A. I. sulfosuccinate
 Ammonium myreth sulfate
 Ammonium nonoxynol 4 sulfate
 Azelamide MEA
 C30-40 alcohol ethoxylate
 C30-50 alcohol ethoxylate
 C40-60 alcohol ethoxylate
 Calcium dodecylbenzene sulfonate
 Calcium laurate
 Ceteareth-2 phosphate
 Ceteareth-5 phosphate
 Ceteareth-10 phosphate
 Ceteareth-25
 Cetyl betaine, C. phosphate
 Cocamide MEA ethoxylate
 Cocamidopropyl betaine, potassium salt
 Cocamidopropyl betaine ammonium salt
 Cocamidopropyl hydroxy sultaine
 Cocamidopropyl hydroxy sultaine, ammonium salt
 Cocamidopropyl hydroxy sultaine, potassium salt
 Cocamidopropylamine oxide
 Coceth-7 carboxylic acid
 Coco-glucoside
 Cocoamphodiacetate lauryl-laureth sulfate
 Cocoamphodiacetate lauryl sulfate
 Cocoamphodiacetate trideceth sulfate
 Coco phosphatidyl PG-dimonium chloride
 N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate
 Cocoyl glutamic acid
 Cocoyl hydrolyzed soy protein
 Cocoyl hydroxyethyl imidazoline
 C11-15 pareth-9, -12, -20, -30, -40
 C12-13 pareth sulfate
 C12-13 pareth-5 carboxylic acid
 C12-15 pareth-12
 C14-15 pareth-8 carboxylic acid
 DEA-oleth-5-phosphate
 DEA-oleth-20-phosphate
 Deceth-3, -6, -8
 Decyltetradeceth-25
 Diceteareth-10 phosphoric acid
 Dimethicone copolyol
 Dimethicone copolyol almondate, D. c. isostearate
 Dimethicone copolyol laurate, D. c. olivate
 Dimethicone copolyol phthalate
 Dimethicone copolyolamine
 Dimethicone propyl PG-betaine
 Dioctyldodeceth-2 lauroyl glutamate
 Dioctyldodeceth-5 lauroyl glutamate
 Dioctyldodecyl lauroyl glutamate
 Disodium capryloamphodiacetate
 Disodium cocoamphodiacetate
 Disodium hydrogenated tallow glutamate
 Disodium laneth-5 sulfosuccinate
 Disodium lauramido MEA-sulfosuccinate
 Disodium laureth sulfosuccinate
 Disodium oleamido MIPA-sulfosuccinate
 Disodium oleamido PEG-2 sulfosuccinate
 Disodium oleth-3 sulfosuccinate
 Disodium ricinoleamido MEA-sulfosuccinate
 Disodium tallamido MEA-sulfosuccinate
 Disteareth-2 lauroyl glutamate

Functions

Disteareth-5 lauroyl glutamate
 Ethoxylated fatty alcohol
 Ethoxylated glycerol sorbitan saturated fatty acid ester
 Ethoxylated glycerol sorbitan unsaturated fatty acid ester
 Glycereth-25 PCA isostearate
 Glycereth-26 phosphate
 Glyceryl hydroxystearate
 Hydrogenated tallowoyl glutamic acid
 Isopropyl hydroxybutyramide dimethicone copolyol
 Lauramidopropyl betaine
 Laureth-1, -2, -3, -4, -7, -12, -16
 Laureth-3 carboxylic acid, L. phosphate
 Laureth-5 carboxylic acid
 Laureth-11 carboxylic acid
 Lauroyl sarcosine
 Lauryl dimethylamine cyclocarboxypropyloleate
 Lauryl hydroxyethyl imidazoline
 Linoleamide DEA
 Magnesium laureth-8 sulfate
 Meroxapal 105, 171, 172
 MEA-lauryl sulfate
 Mixed isopropanolamines myristate
 Myreth-7
 Myristoyl sarcosine
 Myristyl alcohol
 Nonoxynol-7, -9, -13, -15
 Nonoxynol-10 carboxylic acid
 Octoxynol-10, -12
 Octyldodeceth-10, -16
 Oleoyl sarcosine
 Oleth-2 phosphate
 Oleth-5 phosphate
 Oleyl betaine
 Oleyl hydroxyethyl imidazoline
 Palmitamine oxide
 Palmityl betaine
 PCA ethyl cocoyl arginate
 PEG-7 hydrogenated castor oil
 PEG-8 caprylic/capric glycerides
 PEG-8 laurate
 PEG-8 stearate
 PEG-15 glyceryl stearate
 PEG-25 glyceryl isostearate
 PEG-27 lanolin
 PEG-30 lanolin
 PEG-40 castor oil
 PEG-40 glyceryl stearate
 PEG-40 jojoba oil, P. lanolin
 PEG-60 glyceryl isostearate, P. g. stearate

PEG-80 jojoba oil, P. sorbitan laurate
 PEG-120 jojoba oil
 Pentasodium triphosphate
 Poloxamer 101, 122
 Polyglyceryl-2 dioleate
 Polysiloxane-polyether copolymer
 Potassium cocoyl glycinate
 Potassium cocoyl hydrolyzed collagen
 Potassium C9-15 phosphate ester
 Potassium lauroyl hydrolyzed collagen
 Potassium lauryl sulfate
 Potassium myristoyl hydrolyzed collagen
 Potassium oleoyl hydrolyzed collagen
 Potassium palmitate
 Potassium undecylenoyl hydrolyzed collagen
 PPG-2-isodeceth-4 -6 -9 -12
 PPG-6 C12-18 pareth-11
 Protein hydrolysates
 Quaternium-80
 Quillaja saponaria extract
 Raffinose laurate, R. myristate, R. oleate
 Raffinose palmitate, R. stearate
 Ricinoleamidopropyl betaine
 Silicone quaternium-1, -8, -9
 Sodium alpha olefin sulfonate
 Sodium cocoamphoacetate
 Sodium cocoyl hydrolyzed wheat protein
 Sodium cocoyl isethionate
 Sodium C12-13 sulfate
 Sodium C12-14 pareth-2 sulfate
 Sodium C12-15 pareth-3 sulfonate
 Sodium C12-15 pareth-7 carboxylate
 Sodium C12-15 pareth-7 sulfonate
 Sodium C12-15 pareth-8 carboxylate
 Sodium C12-15 pareth-15 sulfonate
 Sodium C12-18 alkyl sulfate
 Sodium C13-17 alkane sulfonate
 Sodium C14-16 olefin sulfonate
 Sodium cetearyl sulfate
 Sodium cetyl oleyl sulfate
 Sodium coco-tallow sulfate
 Sodium cocoyl glutamate
 Sodium cocoyl hydrolyzed collagen
 Sodium cocoyl hydrolyzed soy protein
 Sodium cocoyl sarcosinate
 Sodium dimethicone copolyol aceryl methylaurate
 Sodium hydrogenated tallow glutamate
 Sodium isodecyl sulfate
 Sodium laureth-5 carboxylate
 Sodium laureth-11 carboxylate
 Sodium laureth-13-carboxylate
 Sodium laureth sulfate
 Sodium lauroamphoacetate

Sodium lauroyl glutamate
 Sodium lauroyl hydrolyzed collagen
 Sodium lauroyl sarcosinate, S. l. laurate
 Sodium magnesium laureth sulfate
 Sodium methyl cocoyl taurate
 Sodium methyl oleoyl taurate
 Sodium myristoyl glutamate
 Sodium myristoyl hydrolyzed collagen
 Sodium myristoyl sarcosinate
 Sodium myristyl sulfate
 Sodium nonoxynol-6 phosphate
 Sodium octoxynol-2 ethane sulfonate
 Sodium octyl sulfate
 Sodium oleoyl hydrolyzed collagen
 Sodium stearoyl hydrolyzed collagen
 Sodium trideceth sulfate
 Sodium undecylenoyl hydrolyzed collagen
 Sodium/TEA-lauroyl hydrolyzed collagen
 Sodium/TEA-lauroyl hydrolyzed keratin
 Sorbitan isostearate
 Stearoyl sarcosine
 Sulfated castor oil
 TEA-cocoyl glutamate
 TEA-cocoyl hydrolyzed collagen
 TEA-cocoyl hydrolyzed soy protein
 TEA-C12-15 alkyl sulfate
 TEA-hydrogenated tallow glutamate
 TEA-lauroyl glutamate
 TEA-lauroyl keratin amino acids
 TEA-lauroyl sarcosinate
 TEA-lauryl sulfate
 TEA-myristoyl hydrolyzed collagen
 Tocophereth-5 -10 -18 -20 -30 -50 -70
 Trideceth-7 carboxylic acid
 Trideceth-9
 Trideceth-19-carboxylic acid
 Tridecyl ethoxylate
 Triethanolamine C10-14 sulfate
 Tri-lauryl phosphate
 Wheat germamidopropyl betaine
 Yucca vera extract

Suspending agent

Acrylates/ceteth-20 methacrylates copolymer
 Acrylates/steareth-20 methacrylate copolymer
 Algin
 Bentonite
 C10 polycarbamyl polyglycol ester
 Calcium alginate
 Carbomer, C. 934
 Carrageenan (Chondrus crispus)
 Cellulose gum
 Cetyl hydroxyethylcellulose

Witco

Witco Corporation
 Oleo/Surfactants Group
 Call 800 779-4828
 203 861-6277 (outside the U.S.)
 Fax 203 552-2850

Meeting daily your changing
 needs for surfactants globally



McINTYRE
 GROUP LTD.

OUR NAME IS McINTYRE
 OUR GAME IS AMPHOTERICS

24601 Governors Highway • University Park, IL 60466
 (708) 534-6200 • FAX: (708) 534-6216 • 1-800-645-6457



Functions

Dihydrogenated tallow phthalic acid amide
Distearyl phthalic acid amide
Guar (*Cyanopsis tetragonoloba*) gum
Hectonite
Hydroxypropylcellulose
Isobutylene/MA copolymer
Magnesium aluminum silicate
Methylcellulose
Pentamium triphosphate
Polyethylene, P. micronized
Propylene glycol alginate
Quaternium-18 bentonite
Quaternium-18 hectorite
Sodium magnesium silicate
Sodium polynaphthalenesulfonate
Stearyl potassium bentonite, S. hectorite
Stearic-10 allyl ether/acrylates copolymer
Tragacanth (*Asragalus gummifer*) gum
Tribehenin
Trihydroxystearin
Tris(hexamine) magnesium aluminum silicate
Xanthan gum

Sweetener

Calcium saccharin
Fructose
Glycyrrhizic acid
Glycyrrhizic acid
Glycyrrhizin, ammoniated
Hydrolyzed corn starch
Lactose
Maltitol
Mannitol
Saccharin
Sodium saccharin
Sorbitol
Sucrose

Tanning accelerator

Acetyl tyrosine
Carni (*Daucus carota*) extract
Copper acetyl tyrosinate methylsilanol
Dihydroxyacetone
Disodium malyl tyrosinate
Eclipta alba extract in white emulsion
Glucose tyrosinate

Thickener

Acrylates-VA crosspolymer
Acrylates/C10-C30 alkyl acrylate crosspolymer
Acrylates/ceteth-20 itaconate copolymer
Acrylates/ceteth-20 methacrylates copolymer
Acrylates/steareth-20 itaconate copolymer
Acrylates/steareth-20 methacrylate copolymer
Acrylates/steareth-50 acrylate copolymer
Acrylates/vinyl isodecanoate crosspolymer
Acrylic acid/acrylonitrile copolymer
Algin
Aluminum/magnesium hydroxide stearate
Ammonium acrylates/acrylonitrile copolymer
Ammonium alginate
Arachidyl alcohol
Behenic acid
Behenyl alcohol, B. behenate
Bentonite
C10 polyacrylamyl polyglycol ester
C12-15 alcohols
C12-16 alcohols
C18-36 acid

Calcium alginate
Calcium carrageenan
Caprylic alcohol
Carbomer
Carboxymethyl hydroxyethylcellulose
Carrageenan (*Chondrus crispus*)
Cellulose, C. gum
Cetearyl alcohol, C. behenate
Cetearyl octanoate, C. stearate
Cetostearyl stearate
Cetyl alcohol
Cetyl hydroxyethylcellulose
Cetyl myristate, C. palmitate
Cocamide
Cocamide MEA, C. MIPA
Cocamidopropylamine oxide
Coco-betaine
Coco-rape seed oil
Coco/oleamidopropyl betaine
Cocoyl amido hydroxy sulfo betaine
Cocoyl monoethanolamide ethoxylate
Colloidal silica sols
DEA-hydrolyzed lecithin
DEA-linoleate
DEA-oleth-3 phosphate
DEA oleth-10 phosphate
Decyl alcohol
Dextran
Dextrin
Dilaureth-10 phosphate
Dioleth-8 phosphate
DMHF
Ethoxylated fatty alcohol
Gellan gum
Glycerol behenate, G. stearate
Glycerol polymethacrylate
Guar (*Cyanopsis tetragonoloba*) gum
Guar hydroxypropyltrimonium chloride
Hectorite
Hexyl alcohol
Hydrated silica
Hydrogenated rapeseed oil
Hydrogenated starch hydrolysate
Hydrogenated talloweth-60 myristyl glycol
Hydrolyzed oat flour
Hydrolyzed transgenic collagen
Hydroxyethylcellulose
Hydroxypropyl chitosan
Hydroxypropyl guar
Hydroxypropyl methylcellulose
Hydroxypropylcellulose
Isoceteth-10
Isocetamide DEA
Isocetamidopropylamine oxide
Isocetamphopropionate
Joroca wax
Kara (*Sterculia urens*) gum
Lauramide DEA, L. MEA, L. MIPA
Lauramidopropyl betaine
Laureth-10
Lauryl-linoleic DEA
Lauryl-linoleoyl diethanolamide
Lauryl-myristoyl diethanolamide
Lauryl alcohol, L. betaine
Lauramide DEA, L. MEA
Lauric acid
Lauric acid
Lauric bean (*Ceratonis siliqua*) gum
Magnesium aluminum silicate

MDM hydantoin
Methylcellulose
Montmorillonite
Myristamide DEA, M. MEA
Myristamine oxide
Myristyl alcohol
Octacosanyl stearate
Oleamide, O. DEA, O. MEA
Palmitamide MEA
Pectin
PEG-2 laurate
PEG-3 distearate, P. lauramide
PEG-3 lauramine oxide
PEG-4 diisostearate, P. oleamide
PEG-5M
PEG-6 beeswax
PEG-7 hydrogenated castor oil
PEG-8
PEG-8 dioleate, P. distearate
PEG-8 stearate
PEG-9M
PEG-12 beeswax
PEG-18 glyceryl oleate/cocaoate
PEG-23M
PEG-28 glyceryl tallowate
PEG-40 jojoba oil
PEG-45M
PEG-50 tallow amide
PEG-55 propylene glycol oleate
PEG-75 stearate
PEG-90M
PEG-100 stearate
PEG-120 methyl glucose dioleate
PEG-150 distearate
PEG-150 pentaerythrityl tetrastearate
PEG-160M
PEG-200 glyceryl stearate
PEG-200 glyceryl tallowate
Pentaerythrityl tetrabenate
Pentaerythrityl tetrastearate
Poloxamer 105, 124, 185, 237, 238, 338, 407
Polyacrylic acid
Polysorbate 20
Potassium alginate, P. chloride
Potassium oleate, P. stearate
PPG-5-ceteth-10 phosphate
Propylene glycol stearate
PVM/MA decadiene crosspolymer
PVP
Quaternium-18 bentonite
Quaternium-18 hectorite
Rapeseed oil, ethoxylated high erucic acid
Ricinoleamide MEA
Sesamide DEA
Sodium acrylates/vinyl isodecanoate crosspolymer
Sodium carbomer, S. carrageenan
Sodium ceteth-13-carboxylate
Sodium chloride
Sodium magnesium silicate, S. stearate
Sorbitan sesquioside, S. tristearate
Soyamide DEA
Soyamidopropyl betaine
Starch polyacrylonitrile copolymer-potassium salt
Starch polyacrylonitrile copolymer-sodium salt
Stearyl potassium bentonite, S. hectorite
Stearamide
Stearamide DEA, S. MEA, S. MEA-stearate
Stearamidopropyl dimethylamine lactate
Stearamine oxide

3 BETTER IDEAS.**1 BETTER SOURCE.**

CARBOPOL
Ultrez
The easiest to
use carbomer

CARBOPOL
ETHO
POLYMER
For surfactant-based
emulsifiers

PEMULEN
POLYMERIC EMULSIFIERS
Eliminates surfactant-based
emulsifiers

BF Goodrich
Talk to the global leader.

Functions

Stearth-10 allyl ether/acrylates copolymer
Stearic acid
Stearyl alcohol
Synthetic beeswax
Tallowamide MEA
TEA-acrylates/acrylonitrogens copolymer
Tragacanth (*Astragalus gummifer*) gum
Tribehenin
Trihydroxystearin
Tromethamine magnesium aluminum silicate
Wheat germamide DEA
Wheat germamidopropyl betaine
Xanthan gum

Thixotrope

Bentonite
Hectorite
Sodium magnesium silicate
Stearalkonium bentonite

Toner

Althea officinalis extract
Clover (*Trifolium pratense*) extract
Dog rose (*Rosa canina*) hips extract
Ginseng (*Panax ginseng*) extract
Horsetail extract
Lemon bioflavonoids extract
Meadowsweet (*Spiraea ulmaria*) extract
Nettle (*Urtica dioica*) extract
Rose (*Rosa multiflora*) extract
Rosemary (*Rosmarinus officinalis*) extract

UVA absorber

Benzophenone-1, -2, -3, -4, -6, -8, -9, -11, -12
Butyl methoxydibenzoylmethane
Corallina officinalis
Isopropyl dibenzoylmethane
Menthyl anthranilate
2,2',4,4'-Tetrahydroxybenzophenone
Titanium dioxide
Zinc oxide

UVB absorber

Argania spinosa oil
Benzophenone-1 -2 -3 -4 -6 -9 -11
Corallina officinalis
DEA-methoxycinnamate
Drometrizole
Ethyl dihydroxypropyl PABA
Etocrylene
Homosalate
Isoamyl p-methoxycinnamate
Isopropyl methoxycinnamate
Isopropylbenzyl salicylate
4-Methylbenzylidene camphor
Octocrylene
Octrizole
Octyl dimethyl PABA
Octyl methoxycinnamate
Octyl salicylate, O. triazone
PABA
PEG-25 PABA
Phenylbenzimidazole sulfonic acid
Shea butter, ethoxylated
TEA-salicylate
Titanium dioxide
TriPABA panthenol
Zinc oxide

Vegetable oil

Apricot (*Prunus armeniaca*) kernel oil
Avocado (*Persea gratissima*) oil
Baobab oil
Calendula officinalis oil
Chaulmoogra (*Taraktogenos kurzii*) oil
Coconut (*Cocos nucifera*) oil
Corn (*Zea mays*) oil
Cottonseed (*Gossypium*) oil

Gold of pleasure oil
Grape (*Vitis vinifera*) seed oil
Hazel (*Corylus avellana*) nut oil
Hybrid sunflower (*Helianthus annuus*) oil
Hydrogenated coconut oil
Hydrogenated cottonseed oil
Hydrogenated vegetable oil
Jojoba (*Buxus chinensis*) oil
Kukui (*Aleurites moluccana*) nut oil
Macadamia ternifolia nut oil
Meadowfoam (*Limnanthes alba*) seed oil
Mexican poppy oil
Palm (*Elaeis guineensis*) kernel oil
Partially hydrogenated soybean oil
Peach (*Prunus persica*) kernel oil
Peanut (*Arachis hypogaea*) oil
Pecan (*Carya illinoensis*) oil
Pumpkin (*Cucurbita pepo*) seed oil
Quinoa (*Chenopodium quinoa*) oil
Rapeseed (*Brassica campestris*) oil
Rice (*Oryza sativa*) bran oil
Safflower (*Carthamus tinctorius*) oil
Seabuckthorn oil
Sesame (*Sesamum indicum*) oil
Sisymbrium irio oil
Soybean (*Glycine soja*) oil
Sunflower (*Helianthus annuus*) seed oil
Walnut (*Juglans regia*) oil
Wheat (*Triticum vulgare*) germ oil
Wild borage oil

Vitamin

Aesculus chinensis extract
Ascorbic acid
Ascorbic acid polypeptide
Ascorbyl palmitate
Biotin
Calcium pantothenate
Cholecalciferol
Cyanocobalamin
Eclipta alba extract
Emblica officinalis extract
Equisetum arvense extract
Ergocalciferol
Esculin
Ethyl linoleate
Folic acid
Laminaria japonica extract
Marsilea minuta extract
Melaleuca bracteata extract
Menadiene
Nasturtium sinensis extract
Nelumbium speciosum extract
Niacin
Niacinamide, N. ascorbate
Nicotinamide
Nicotinic acid
Ocimum basilicum extract
Panthenyl triacetate
Pantothenic acid
Phytonadione
Pyridoxine HCl
Retinol
Retinyl acetate, R. palmitate
Retinyl palmitate polypeptide
Retinyl propionate
Riboflavin tetraacetate
Sodium ascorbate
Thiamine HCl
Tocopherol
Tocopheryl acetate, T. succinate

Wax

Bayberry (*Myrica cerifera*) wax
Behenoxymethicone
C16-18 alkyl methicone
Candelilla (*Euphorbia cerifera*) wax
Carnauba (*Copernicia cerifera*) wax

Ceresin

Cetyl dimethicone, C. isooctanoate
Dialkyldimethylpolysiloxane
Dimethiconol hydroxystearate
Dimethiconol stearate
Hydrogenated castor oil
Hydrogenated cottonseed oil
Hydrogenated jojoba oil, H. j. wax
Hydrogenated palm kernel oil
Hydrogenated rapeseed oil
Hydrogenated rice bran wax
Hydrogenated vegetable oil
Isooctadecyl isononanoate
Japan (*Rhus succedanea*) wax
Jojoba esters
Montan (*Montan cera*) wax
Ouricury wax
Ozokerite
Polyglyceryl-3 beeswax
Spermaceti
Stearoxymethicone/dimethicone copolymer
Stearoxymethylsilane
Synthetic candelilla wax
Synthetic carnauba

Wetting agent

Benzalkonium chloride
Benzethonium chloride
Cetalkonium chloride
Ceteareth-20
Ceteth-20
Cetyl pyridinium chloride
Cocoamphodipropionic acid
Decaglycerol monodiolate
Deceth-9
Dihydroabietyl methacrylate
Dimethicone copolyol methyl ether
Dimethicone copolyol phthalate
Diethyl sodium sulfosuccinate
Ethyl hydroxymethyl oleyl oxazoline
Hydroxylated milk glycerides
Isolureth-6
Lanolin acid
Lauryl pyrrolidone
Lecithin
Methyl hydrogenated rosinat
Methyl rosinat
Nonyl nonoxynol-5
Octoxynol-8, 70
Oleth-15
Oleth-20 phosphate
PEG-9 castor oil
PEG-15 castor oil
PEG-20 glyceryl stearate
PEG-20 sorbitan triisostearate
PEG-45 palm kernel glycerides
PEG-60 almond glycerides, P. corn glycerides
PEG-60 shea butter glycerides
PEG-70 mango glycerides
PEG-75 shorea butter glycerides
PEG-80 sorbitan laurate
Poloxamer 123, 181, 182, 184, 235, 334
Polyether trisiloxane
Polyglyceryl-3 oleate
Polyglyceryl-6 dioleate
Polyglyceryl-10 tetraoleate
Polysorbate 60, 80
PPG-2-isodeceth-4, -6, -9, -12
PPG-10 lanolin alcohol ether
Propylene glycol
Sodium butoxyethoxy acetate
Sodium capryloamphohydroxypropylsulfonate
Sodium decyl diphenyl ether sulfonate
Sodium dodecyl diphenyl ether sulfonate
Sodium lauryl sulfate
Sulfated castor oil
Trisoceryl citrate
Trisostearin PEG-6 esters
Yucca vera extract

Claims:

1. A cosmetic composition, comprising:

a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component randomly bonded to at least one poly(acrylic acid) component said polymer network capable of aggregation
5 in response to a change in temperature; and

a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.

2. A cosmetic composition for topical application, comprising:

10 a cosmetically acceptable carrier, comprising a reverse thermal viscifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and

15 a cosmetically active agent selected to treat imperfections or disorders of the skin, said carrier and said agent disposed within an aqueous-based medium.

3. The cosmetic composition of claim 1, wherein the cosmetic composition is a shampoo and the cosmetically active agent comprises a cleansing surfactant.

20

4. The cosmetic composition of claim 1, wherein the cosmetic composition is a moisturizer and the cosmetically active agent comprises a moisturizer.

25 5. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunscreen and the cosmetically active agent comprises a uv-absorbing agent.

6. The cosmetic composition of claim 1, wherein the cosmetic composition is an acne cream and the cosmetically active agent comprises an antiacne agent.

5 7. The cosmetic composition of claim 1, wherein the cosmetic composition is a hair straightener and the cosmetic agent comprises a base for increasing the pH.

10 8. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunless tanning lotion and the cosmetically active agent comprises skin tinting agent.

15 9. The cosmetic composition of claim 1, wherein the cosmetic composition is an antiperspirant and the cosmetically active agent comprises aluminum chlorhydrate.

20 10. The cosmetic composition of claim 1, wherein the cosmetic composition is a shaving cream and the cosmetically active agent comprises an emollient and a foaming surfactant.

11. The cosmetic composition of claim 1, wherein the cosmetic composition is a face cosmetic and the cosmetically active agent comprises a pigment.

25 12. The cosmetic composition of claim 1 or 2, wherein the cosmetic agent comprises a hydrophobic material, wherein the cosmetically acceptable carrier stabilizes the hydrophobic material in the aqueous medium.

13. The cosmetic composition of claim 2, wherein said cosmetic agent selected to treat imperfections or disorders of the skin is selected from the group consisting of acidulents, antiacne agents, anti-aging agents, anti-inflammatories, anti-irritants, antioxidants, depilatories, detergents, disinfectants, emollients, exfoliants, humectants, lubricants, moisturizers, skin conditioners, skin protectants, skin lightening agents, skin soothing agents, sunscreens, tanning accelerators and mixtures thereof.

14. The composition of claim 4, wherein said composition further comprises a cosmetic agent selected from the group consisting of humectants and emollients.

15. The composition of claim 1 or 2, further comprising one or more additives selected from the group consisting of preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, antringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents, conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glossers, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances

16. The composition of claim 1, wherein the cosmetic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, mousses, sprays, aerosols, pad-applied formulations and masks.

5 17. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 27 to 40°C.

18. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 30 to 37°C.

10 19. The composition of claim 1, wherein said composition is formulated as a product selected from the group consisting of baby products, baby shampoos, lotions, powders and creams; bath preparations, bath oils, tablets and salts, bubble baths, bath fragrances bath capsules; eye makeup preparations, eyebrow pencil,
15 eyeliner, eye shadow, eye lotion, eye makeup remover, mascara; fragrance preparations, colognes, toilet waters, powders and sachets; noncoloring hair preparations, hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics: hair coloring preparations, hair dye, hair tints, hair color sprays, hair lighteners and hair bleaches;
20 makeup preparations, face powders, foundations, leg and body paints, lipstick makeup bases, rouges and makeup fixatives; manicuring preparations, basecoats, undercoats, cuticle softeners, nail creams, nail extenders, nail polish and enamel, and remover; oral hygiene products, dentrifices, mouthwashes; personal cleanliness, bath soaps, detergents, deodorants, douches and feminine hygiene product; shaving preparations,
25 aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap, preshave lotions; skin care preparations, skin cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders; moisturizers, night preparations, paste masks, skin fresheners; and suntan preparations, suntan creams, gels and lotions, and indoor tanning preparations.

20. The cosmetic composition of claim 1 or 2, wherein the poloxamer component is present in an amount in the range of about 0.01 to 20 wt% and the poly(acrylic acid component) is present in the amount of about 0.01 to 20 wt%.

5 21. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamers.

22. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamer components randomly bonded to a poly(acrylic acid) backbone.
10

23. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer composition comprises a plurality of poly(acrylic acid) components randomly bonded to a poloxamer component.
15

24. The cosmetic composition of claim 1, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

20 25. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and increase viscosity of the reversible viscosifying polymer network.

25 26. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and decrease viscosity of the reversible viscosifying polymer network.

27. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature without affecting viscosity of the reversible viscosifying polymer network..

5 28. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and increase viscosity of the reversible viscosifying polymer network.

10 29. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and decrease viscosity of the reversible viscosifying polymer network.

15 30. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature without affecting viscosity of the reversible viscosifying polymer network.

20 31. The cosmetic composition of claim 1, further comprising an additive selected to increase viscosity without affecting transition temperature of the reversible viscosifying polymer network.

32. The cosmetic composition of claim 1, further comprising an additive selected to decrease viscosity without affecting transition temperature of the reversible viscosifying polymer network.

25 33. The cosmetic composition of claim 1 or 2, characterized in that the gel remains translucent to light before and after response to the environmental stimulus.

34. The cosmetic composition of claim 1, wherein the poly(acrylic acid) is branched.

35. Method of making an cosmetic composition, comprising:

5 dissolving a poloxamer capable of aggregation in response to a change in temperature in acrylic acid monomer;

initiating polymerization of the monomer to form a poly(acrylic acid) randomly bonded to the poloxamer, so as to form a reversibly viscosifying polymer composition;

10 mixing the reversibly gelling polymer compositions with a cosmetic agent which imparts a desired cosmetic effect to the composition.

36. The method of claim 36, wherein a polymerization initiator is selected to provide the polymer network having a selected temperature of viscosification.

15

37. The method of claim 36, wherein one or more poloxamers are added.

38. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer network is present in an amount in the range of 0.01% 10%.

20

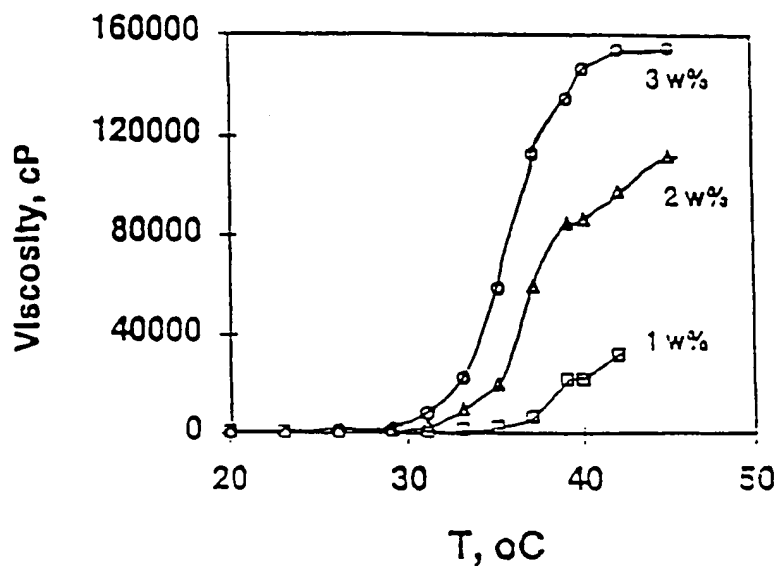


Figure 1.

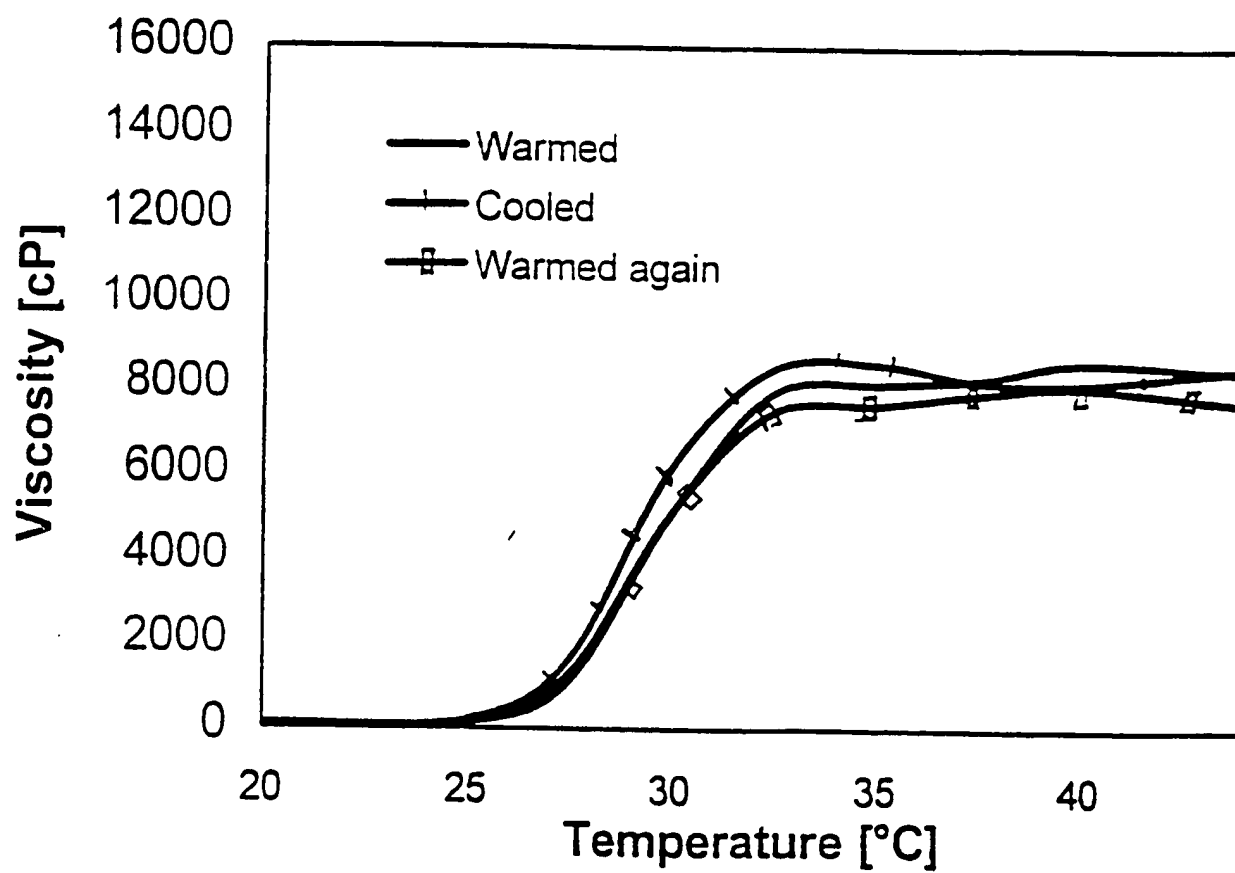


Figure 2

3/28

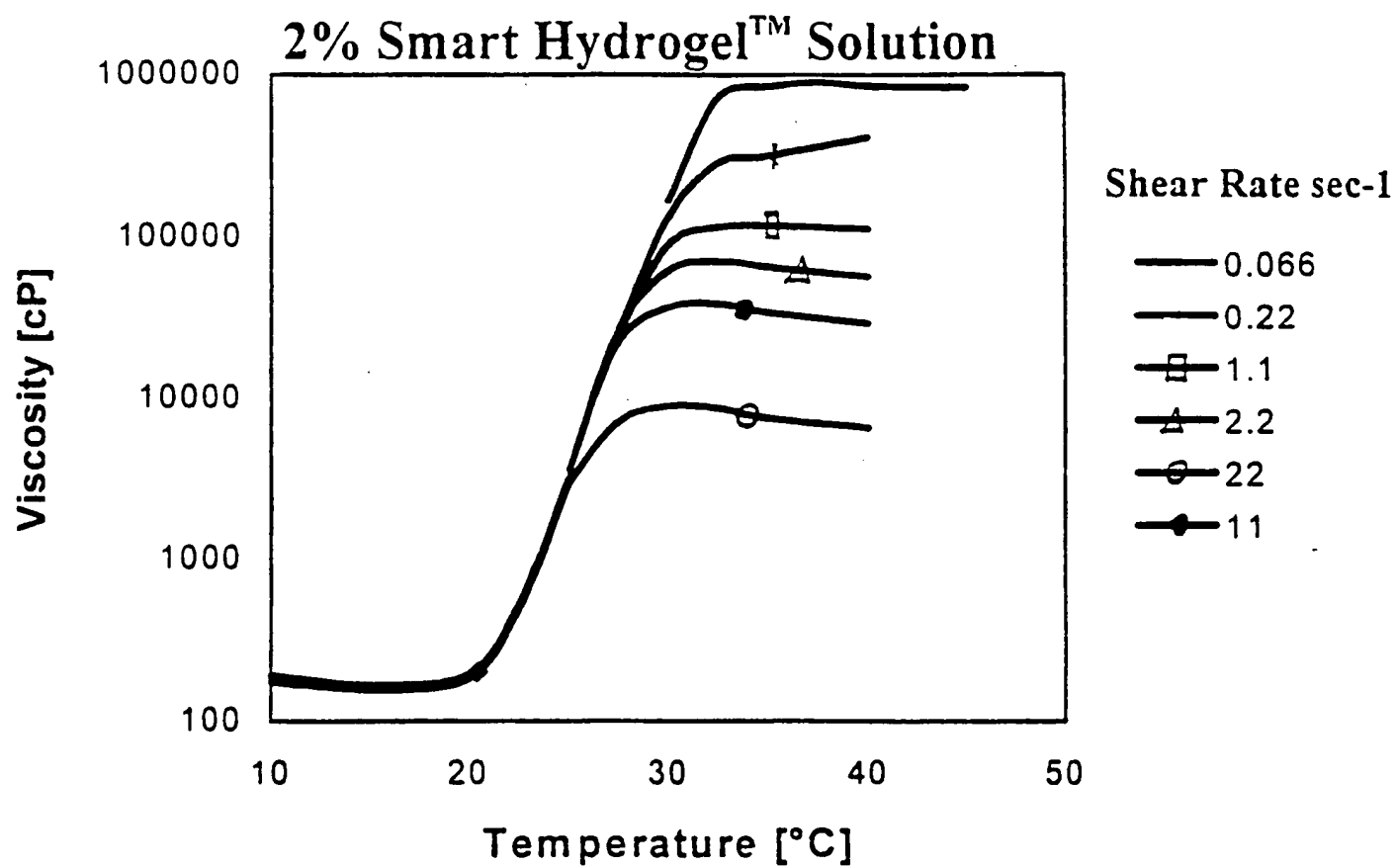


Figure 3

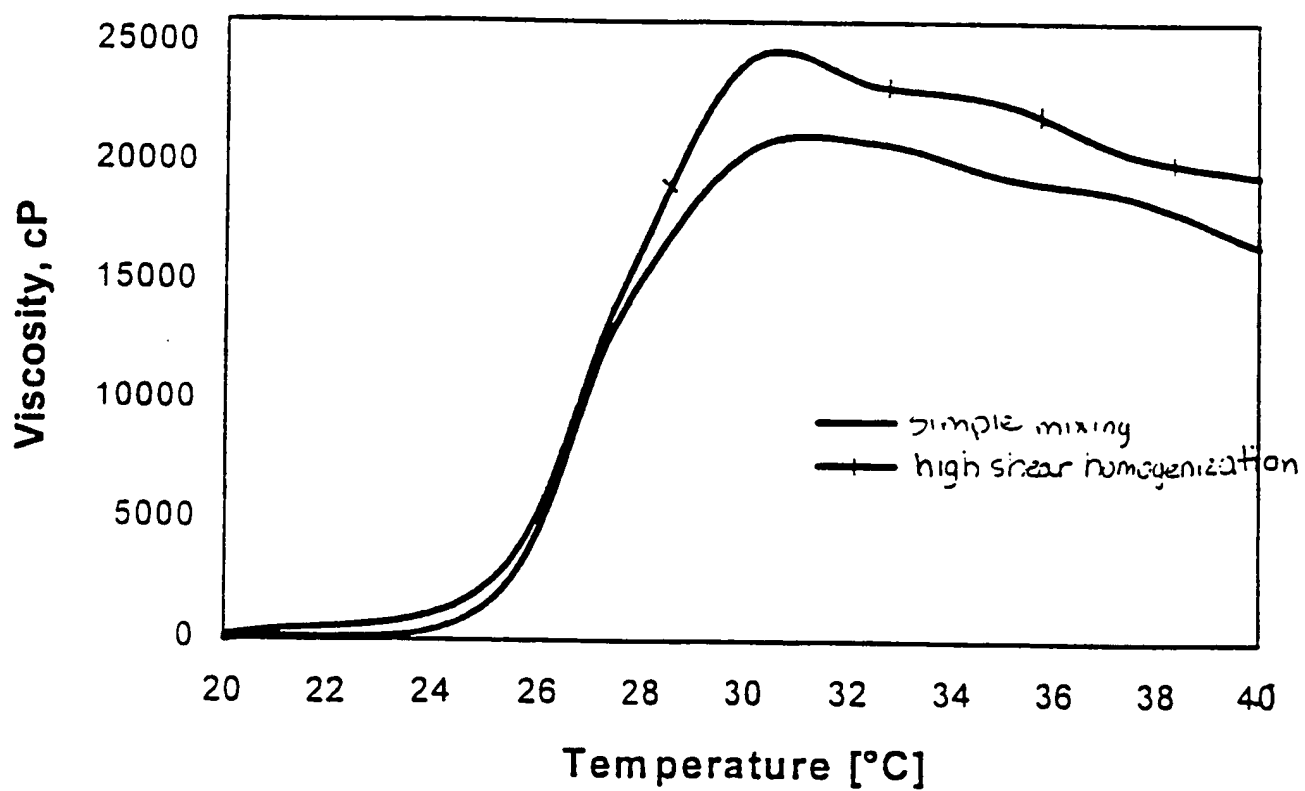


Figure 4

5/28

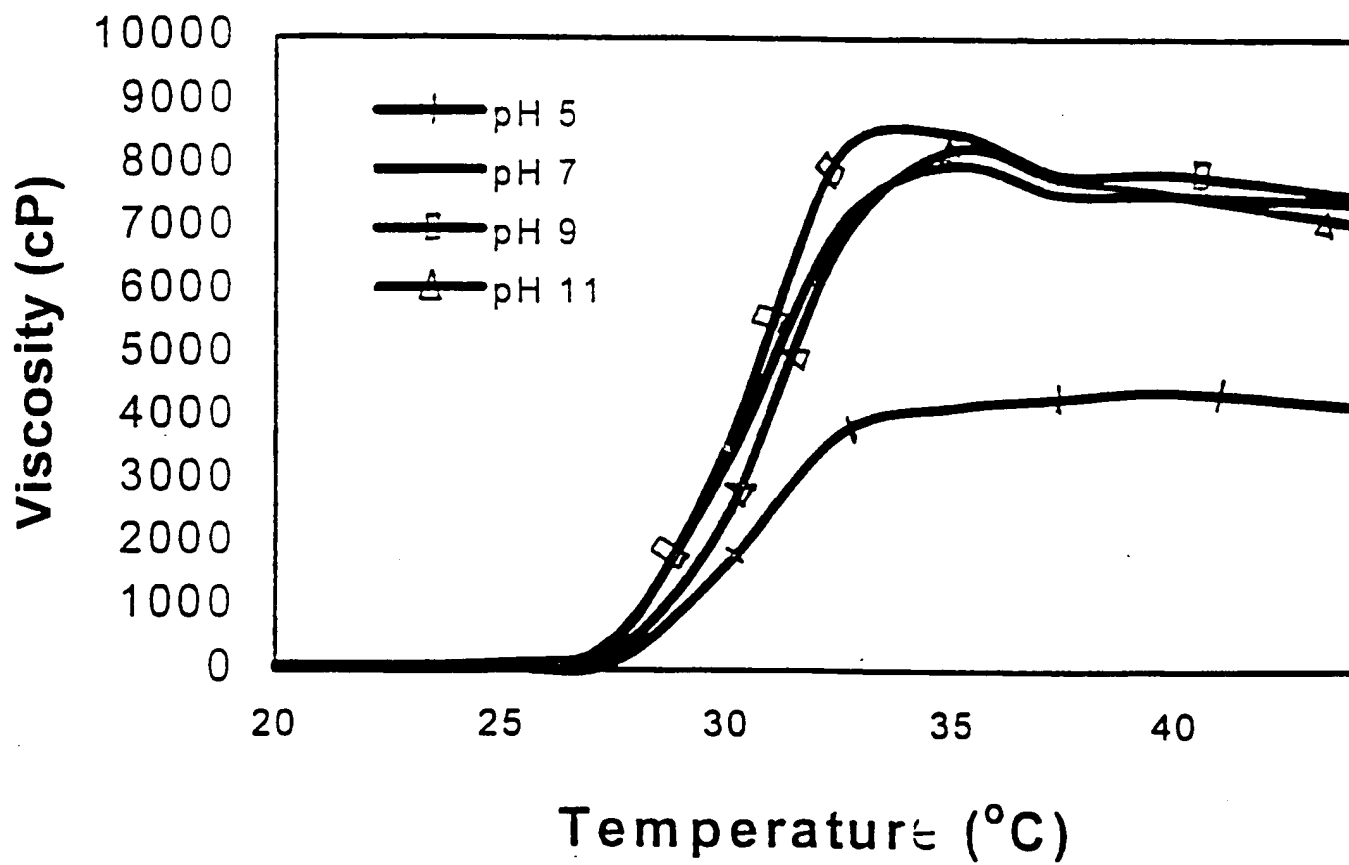


Figure 5

6/28

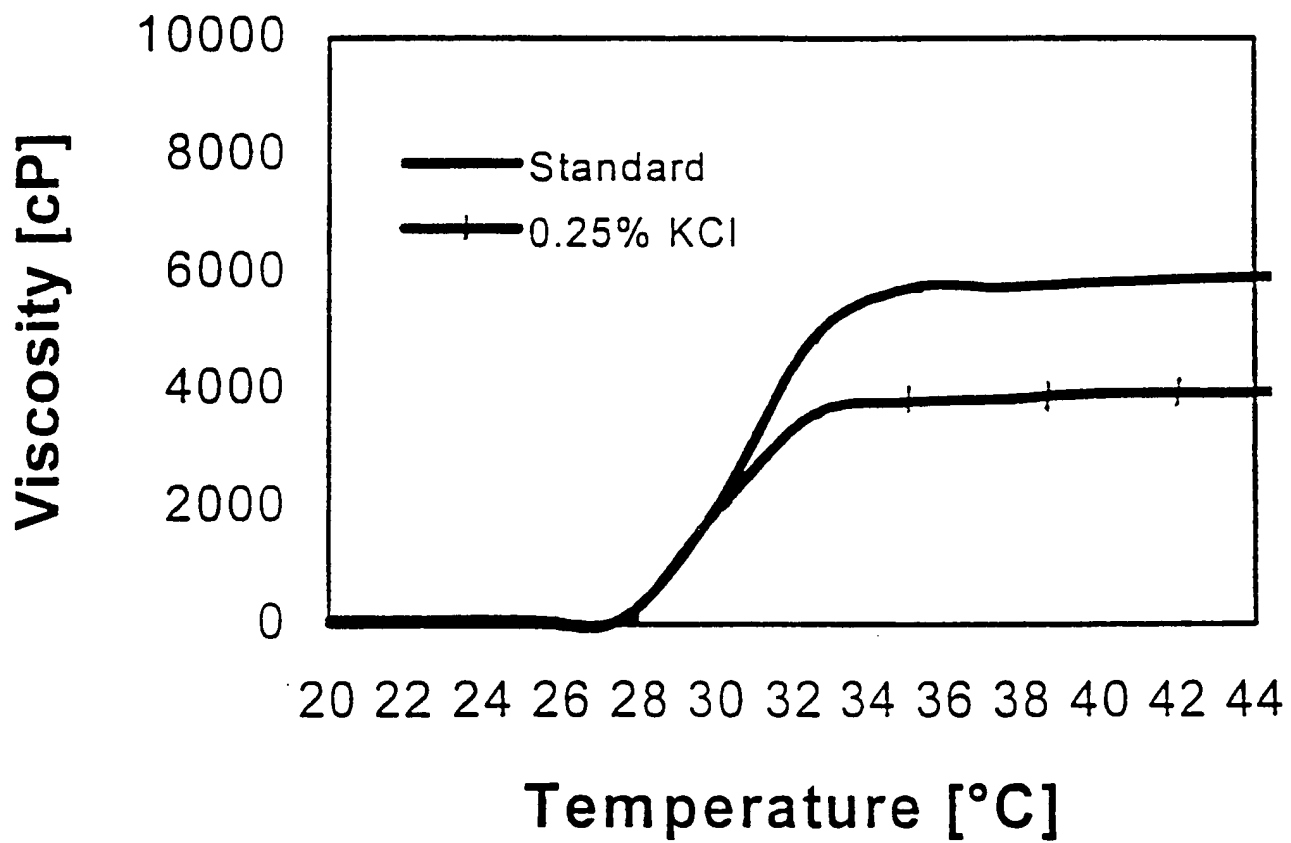


Figure 6

7/28

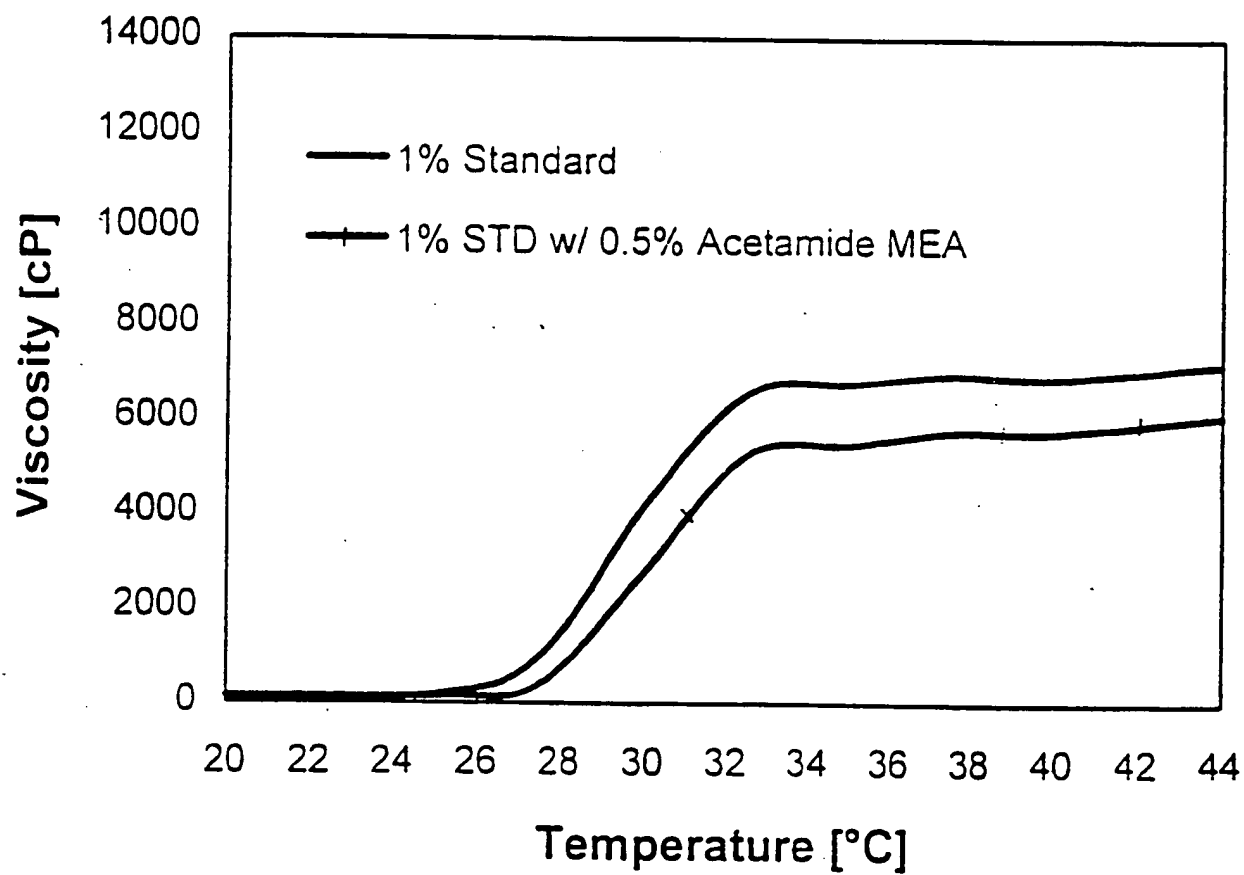


Figure 7

8/28

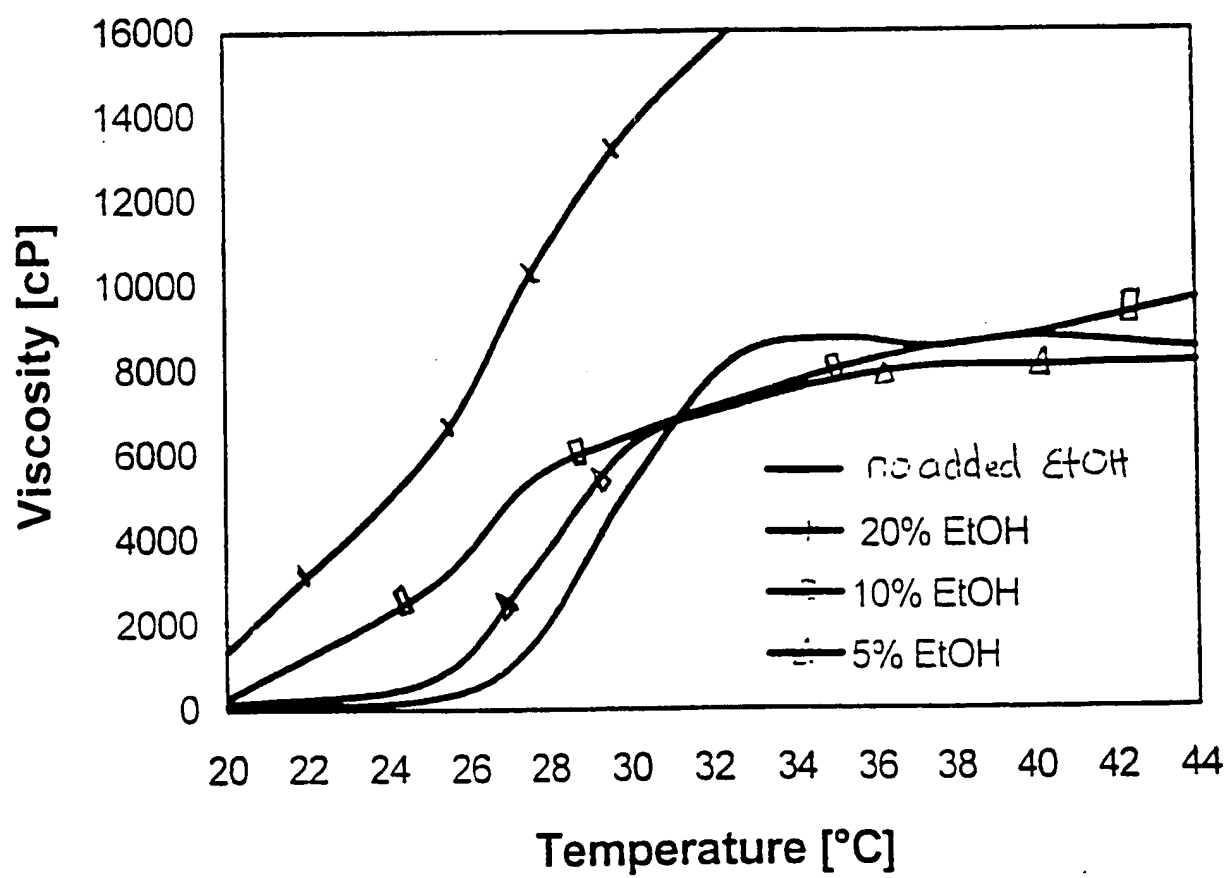


Figure 8

9/28

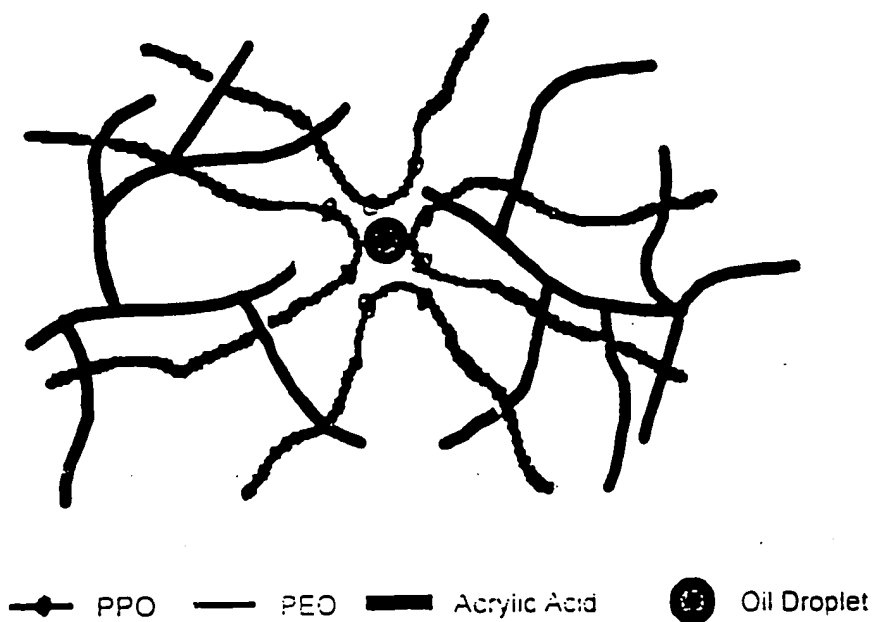
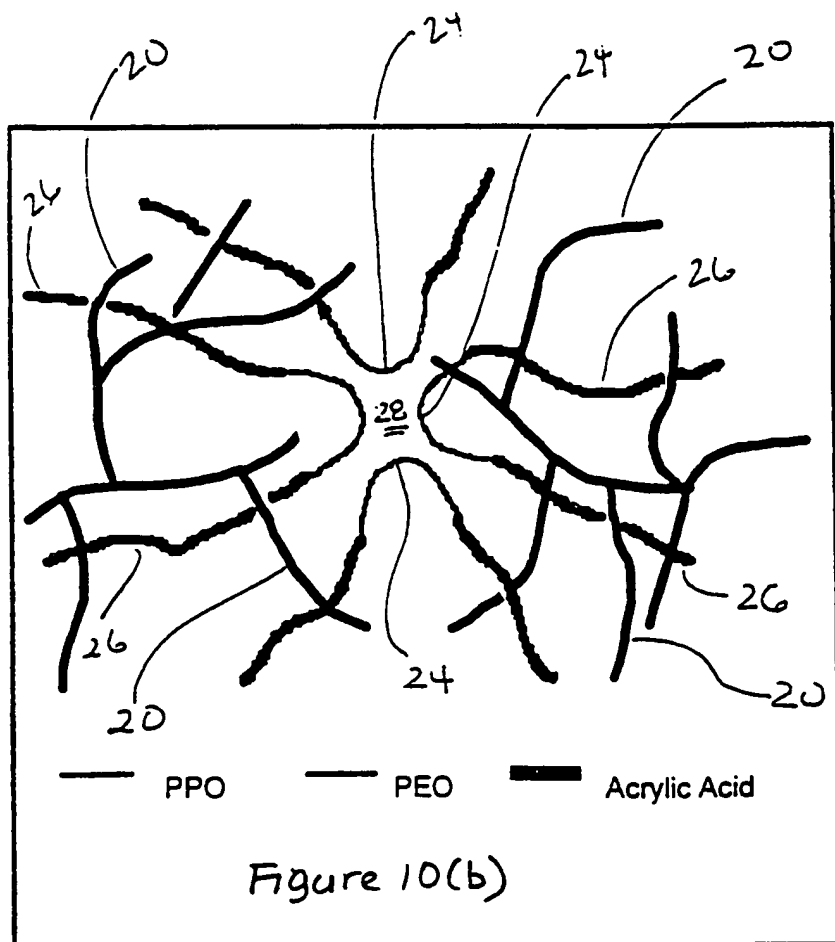
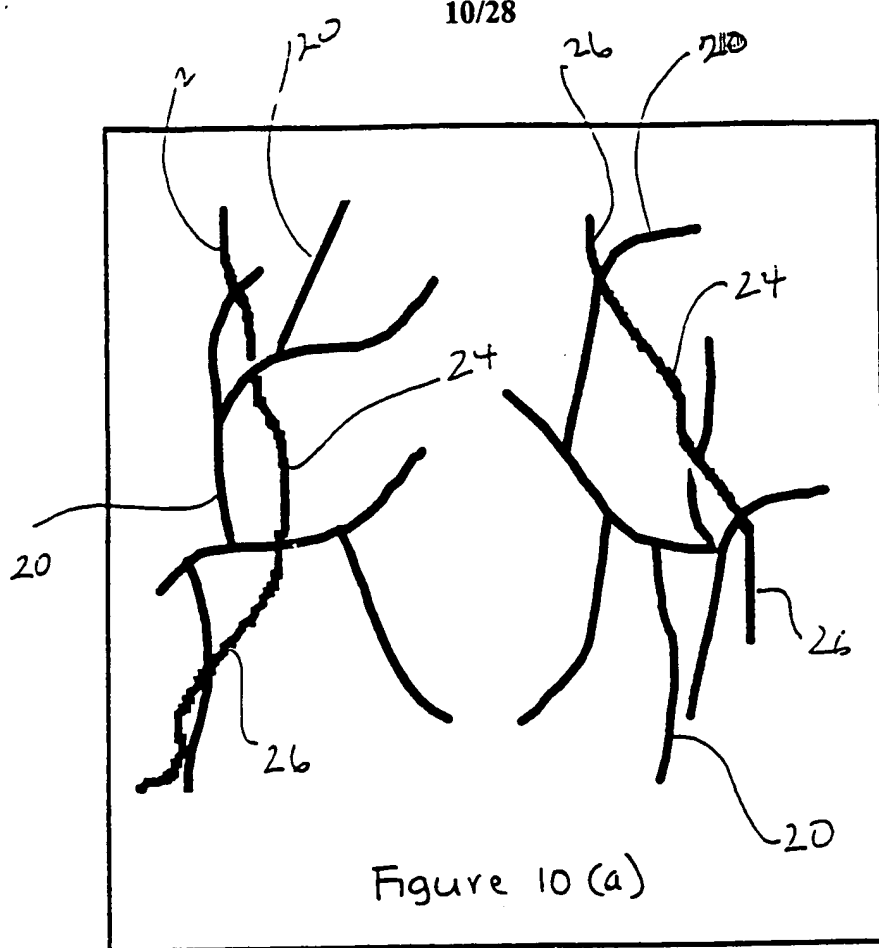


Figure 9

10/28



11/28

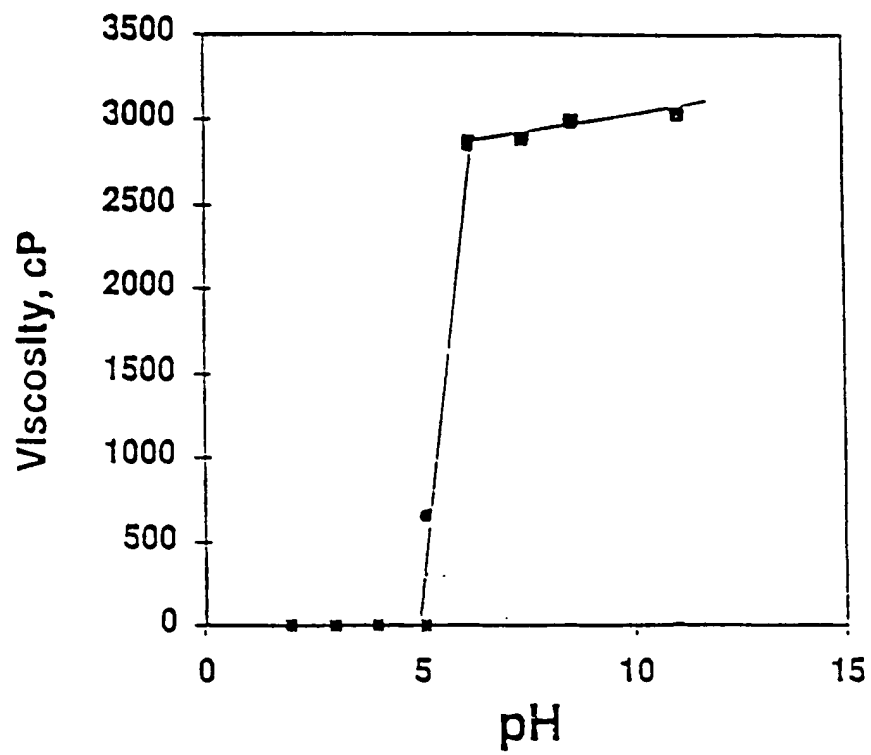


Figure 11

12/28

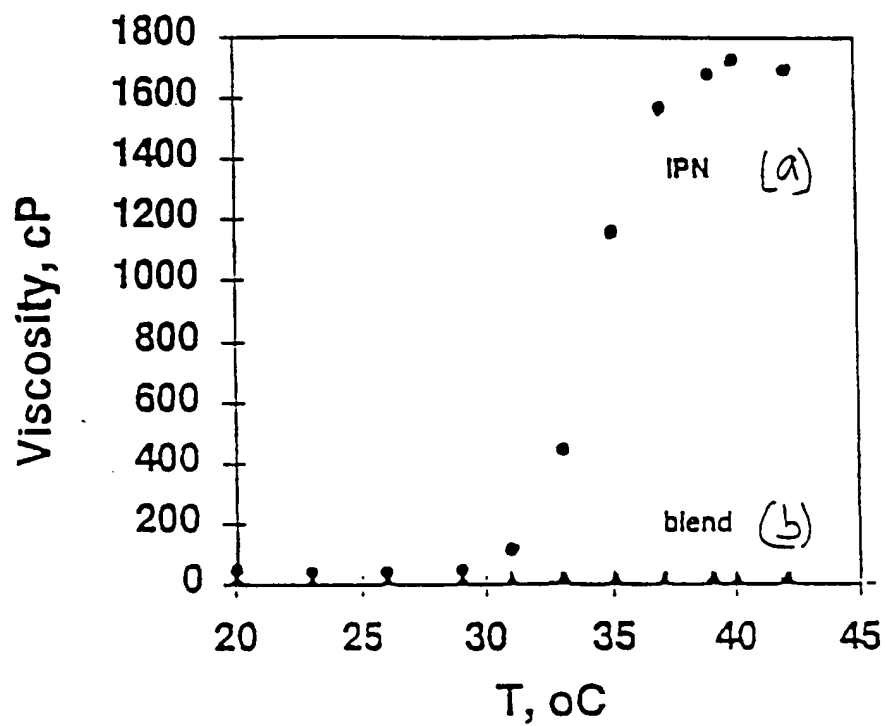


Figure 12

13/28

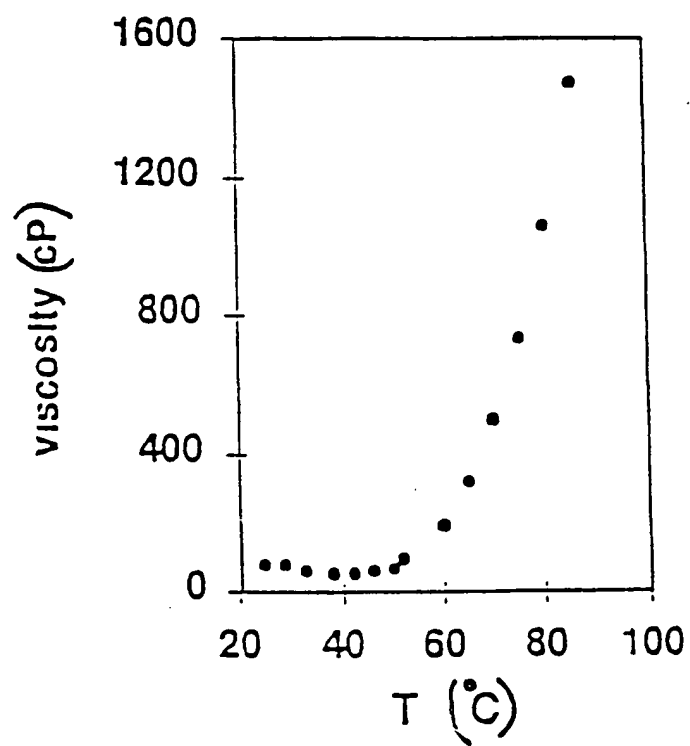


Figure 13

14/28

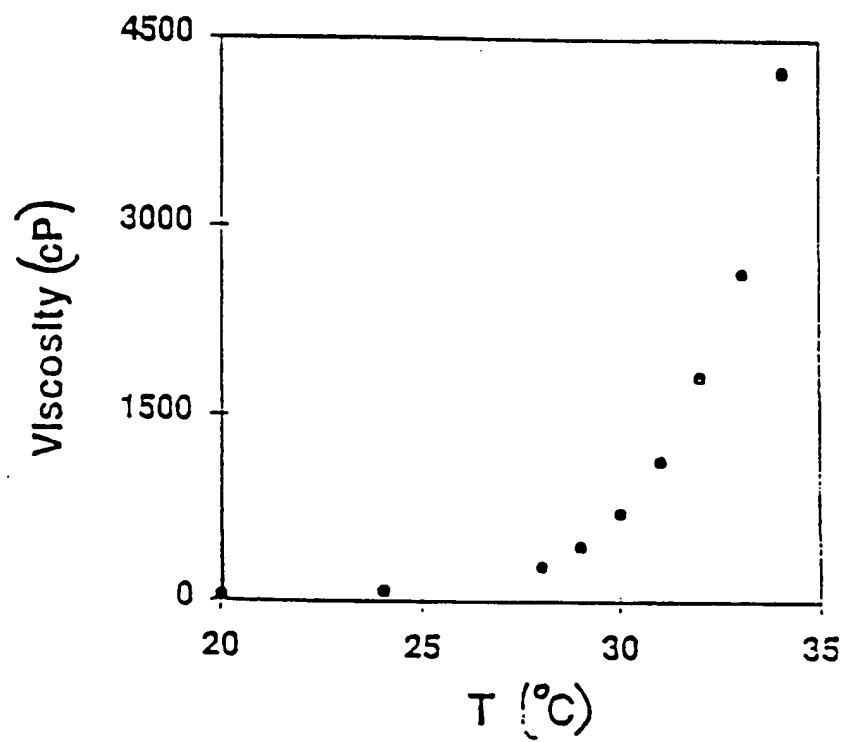


Figure 14

15/28

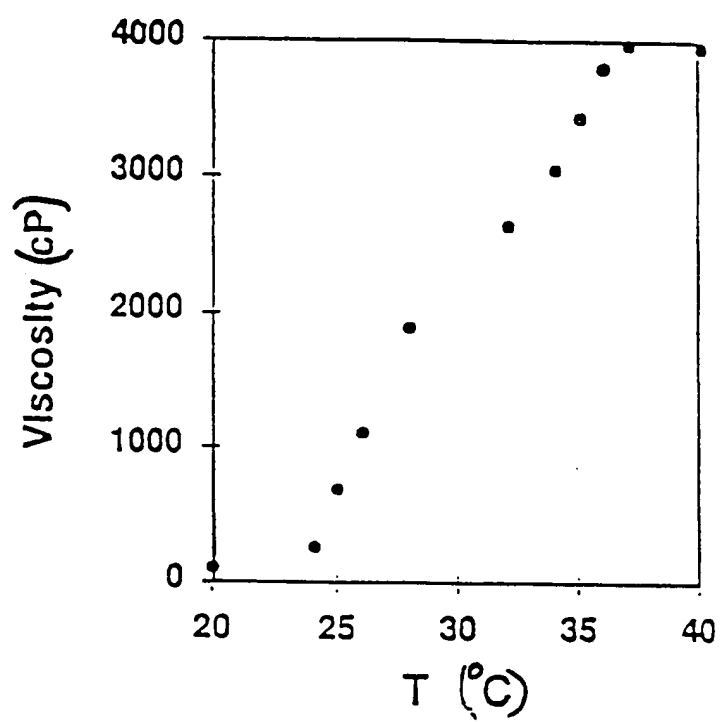


Figure 15

16/28

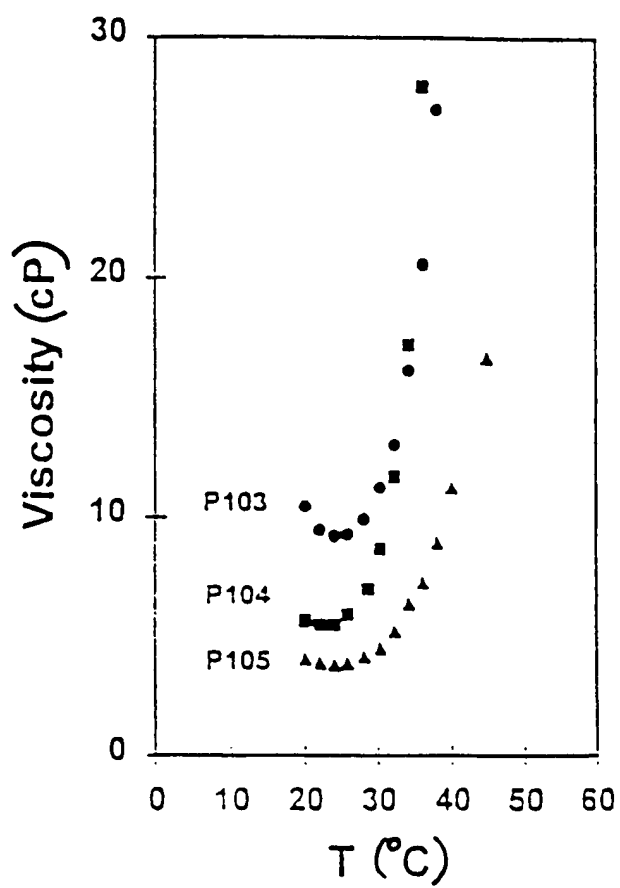


Figure 16

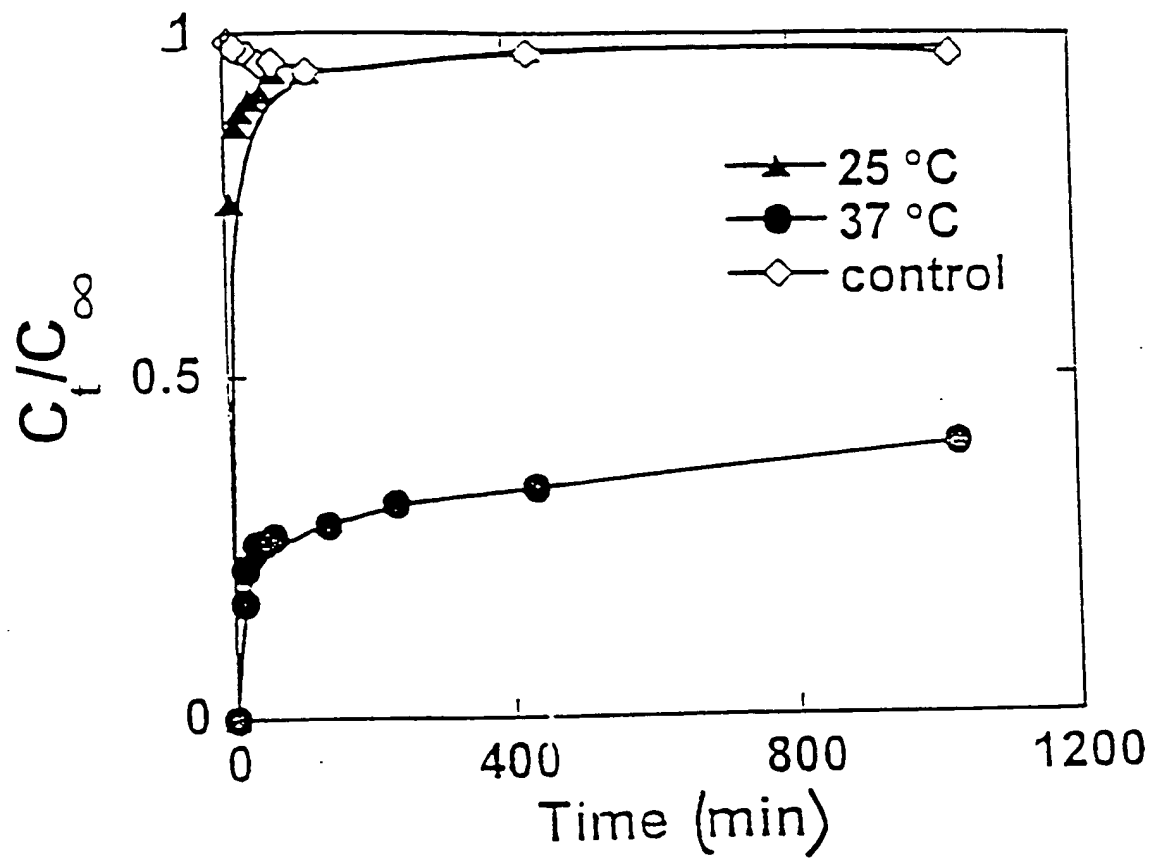


Figure 17

18/28

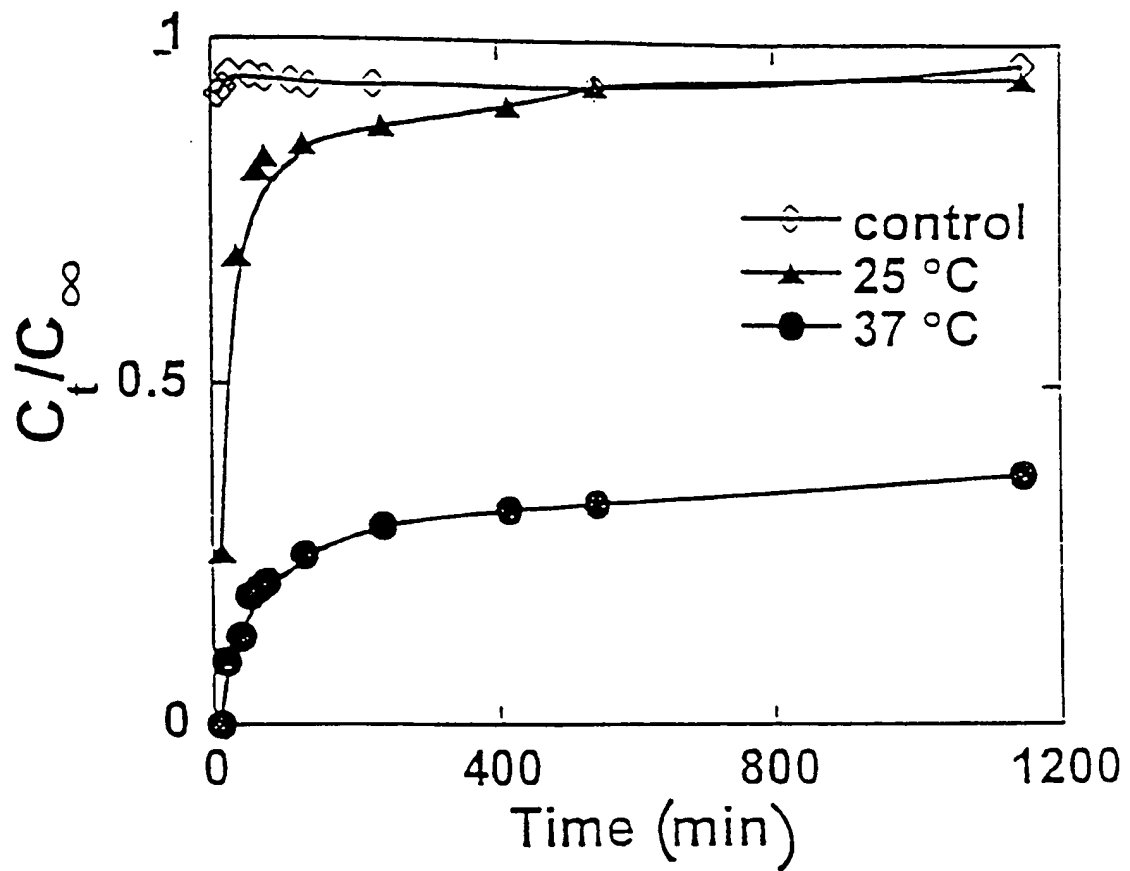


Figure 18

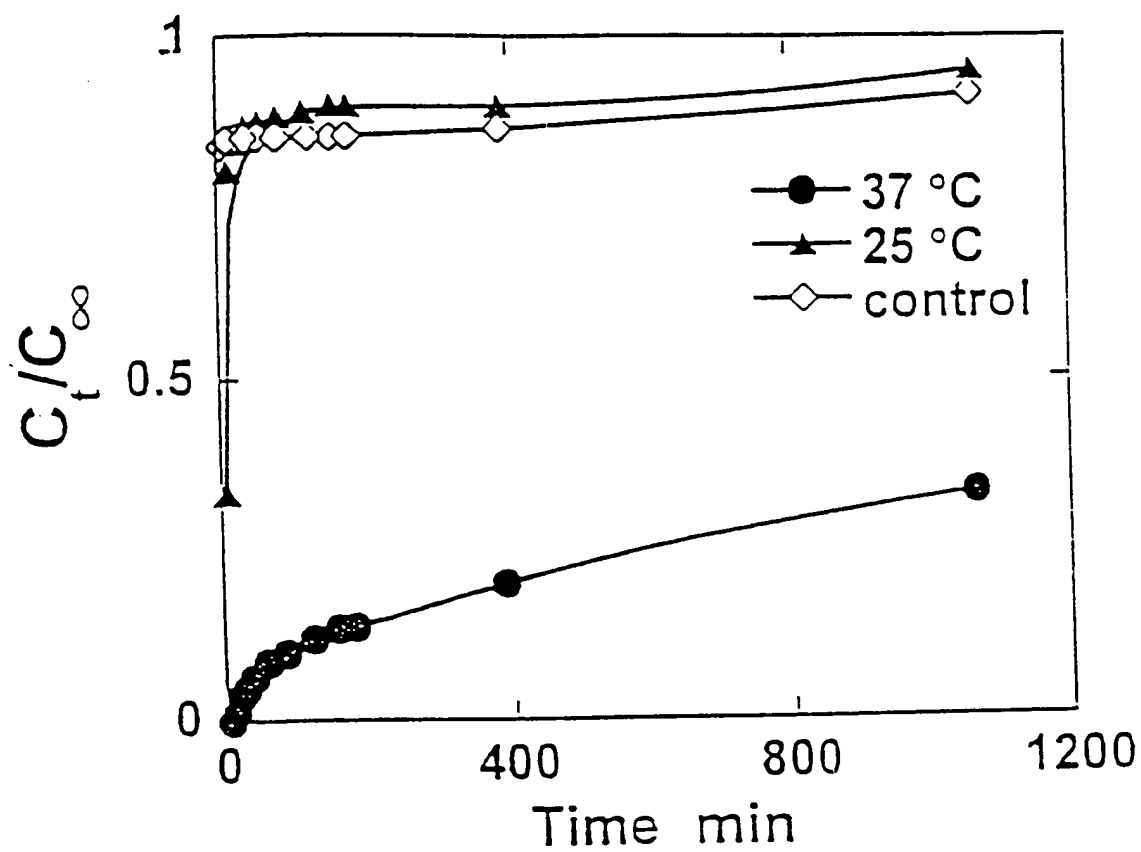


Figure 19

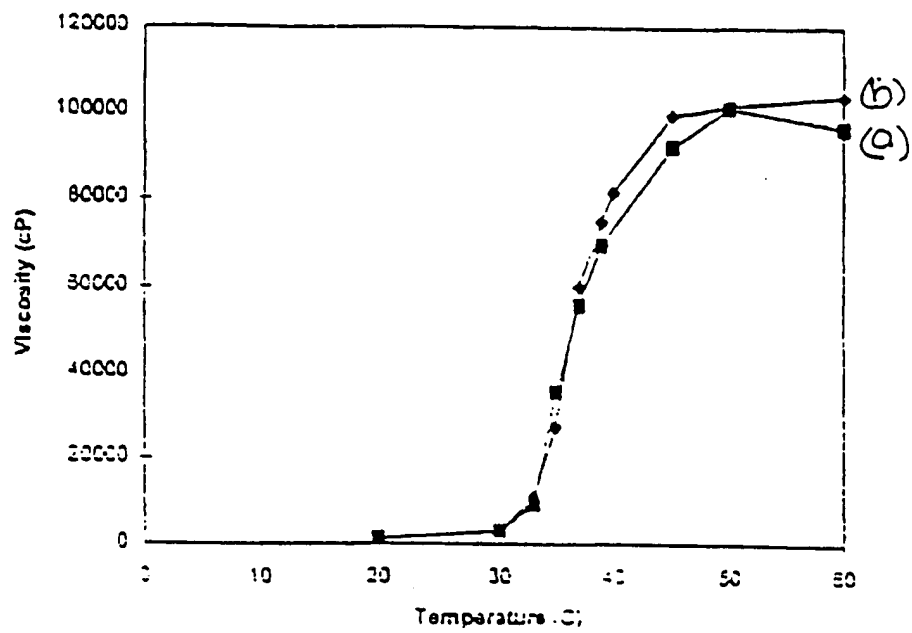


Figure 20

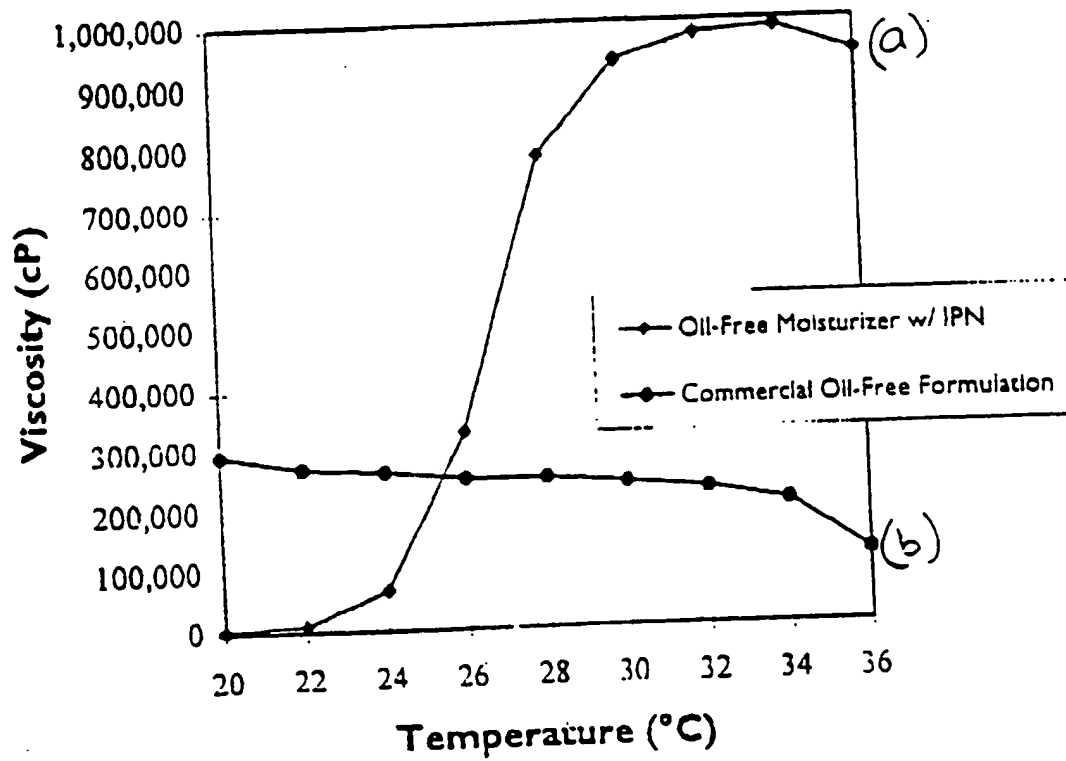


Figure 21

22/28

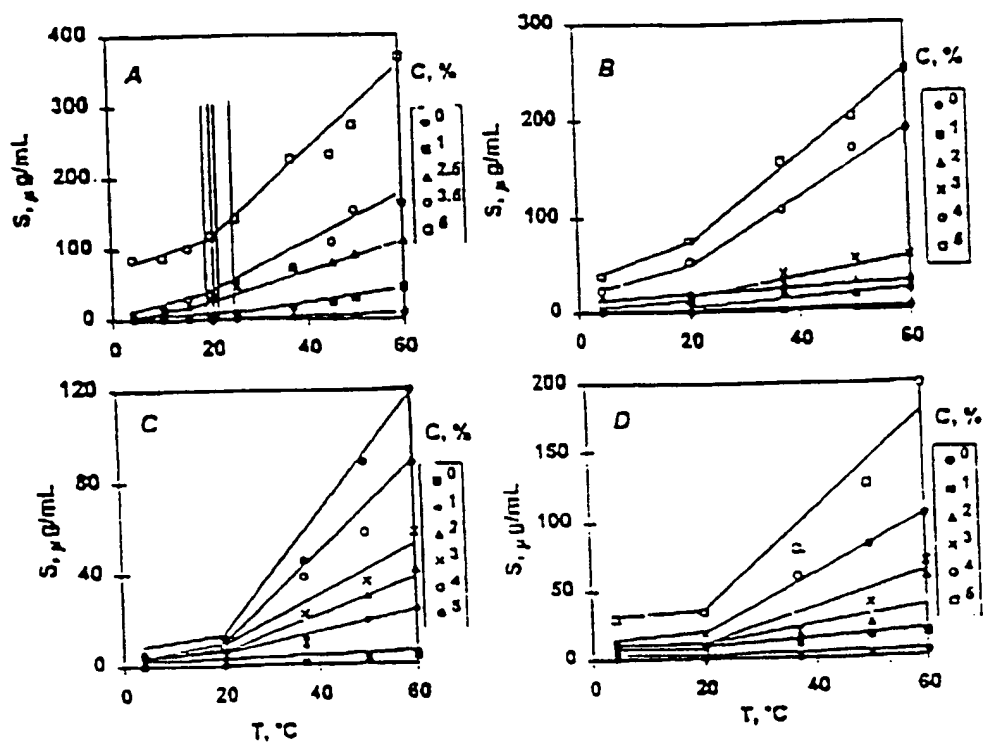


Figure 22

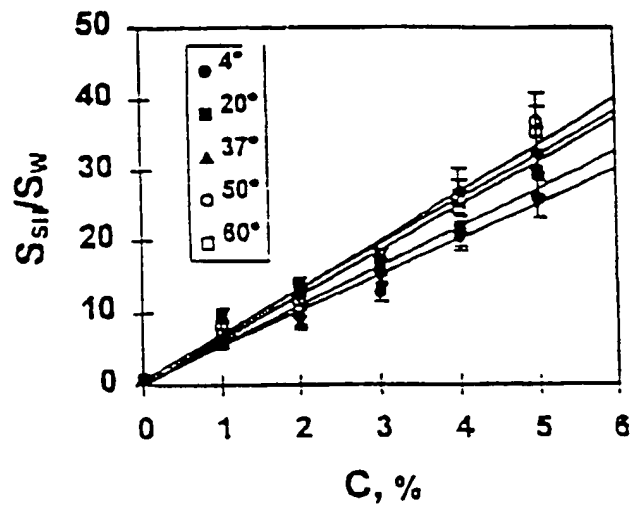


Figure 23

24/28

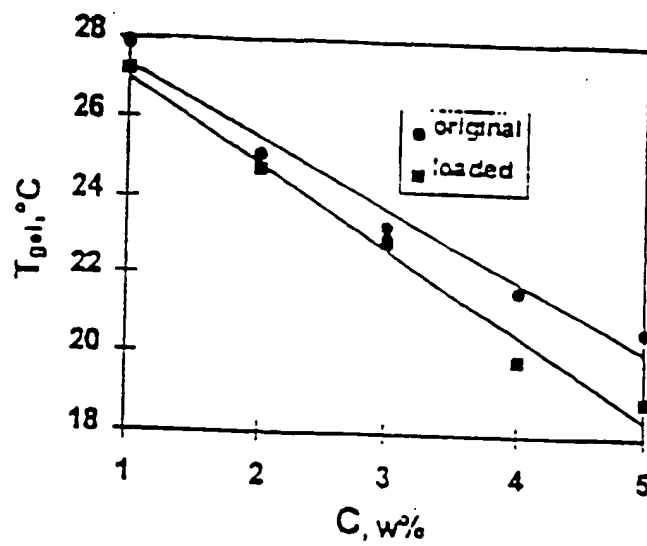
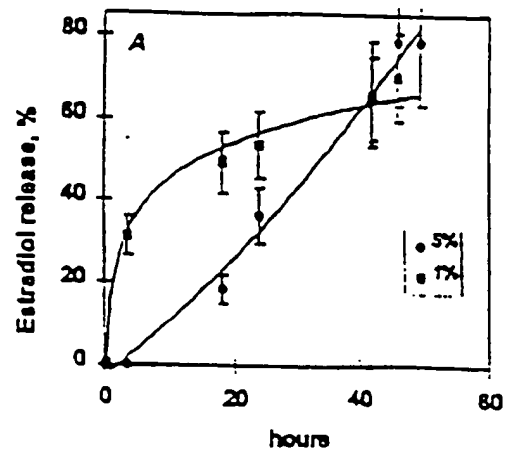
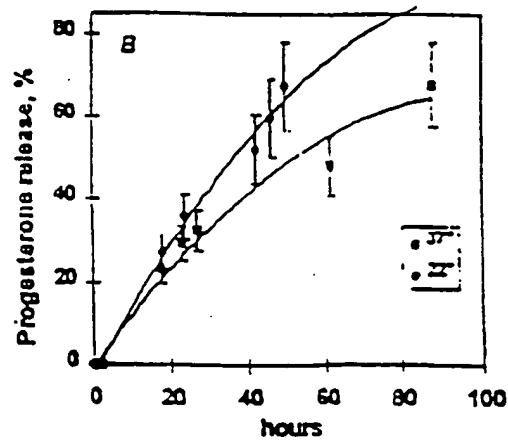


Figure 24

25/28



a



b

Figure 25

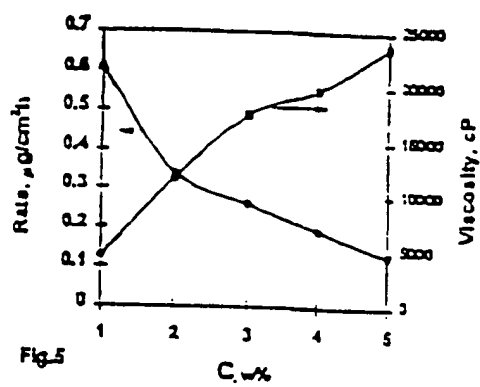


Figure 26

27/28

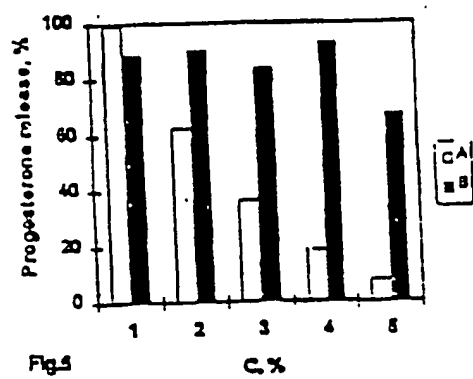


Figure 27

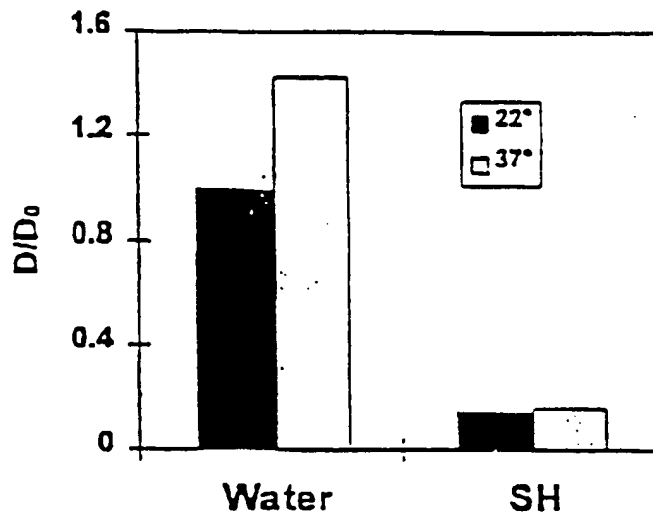


Figure 28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/08931

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74

US CL : Please See Extra Sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS: COSMETIC, POLYACRYLIC ACID, POLYMER NETWORK, POLOXAMER

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 5,662,892 A (BOLICH, JR. et al.) 02 September 1997, see entire document.	1-38
Y	US 5,106,609 A (BOLICH, JR et al.) 21 April 1992, see entire document.	1-38

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A		document defining the general state of the art which is not considered to be of particular relevance
*E		earlier document published on or after the international filing date
*L		document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
*O		document referring to an oral disclosure, use, exhibition or other means
*P		document published prior to the international filing date but later than the priority date claimed
	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
	*A	document member of the same patent family

Date of the actual completion of the international search

03 AUGUST 1998

Date of mailing of the international search report

02 OCT 1998

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

SHELLEY A. DUDSON

Telephone No. (703) 308-1235

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/08931

A. CLASSIFICATION OF SUBJECT MATTER:

US CL : 424/49, 59, 63, 64, 65, 70.1, 70.2, 70.7, 78.02, 70.08, 400, 401, 405

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☒ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☒ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

This Page Blank (uspto)